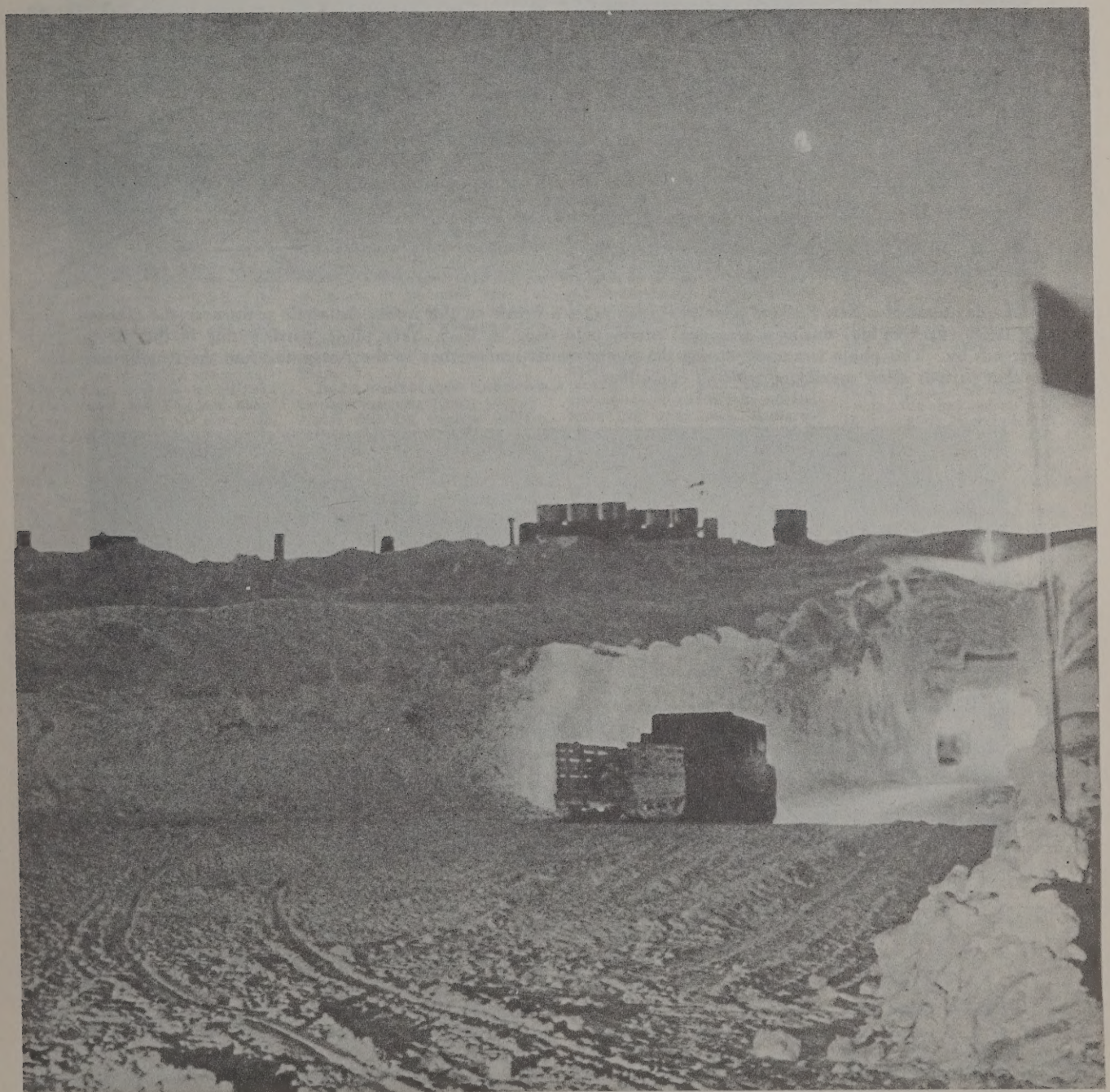
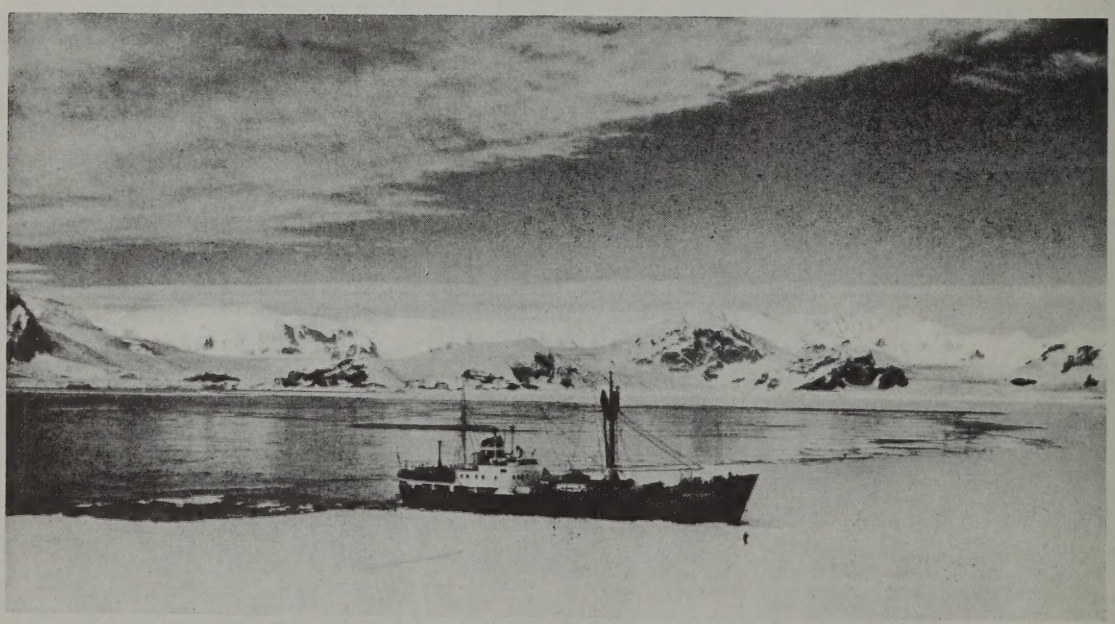
THE POLAR TIMES



At right is entrance to Camp Century; in the sky, the moon. Glow in background is sun, which sets in October and doesn't rise until April

The dog team of a New Zealand scientific group takes a break on the frozen Antarctic plain near the Nimrod Glacier (background) during a geological survey field trip. A U. S. Navy plane, participating in the survey, stands by. This photo was made during the recent winter-summertime in the Antarctic when the lengthy daylight periods allow maximum research operations.



During the establishment of a base for the F.I.D.S. (Falkland Islands Dependencies Survey) of 1960/61 the KISTA DAN was deliberately driven into the ice of Beascochia Bay, south of Argentine Islands.

KISTA DAN

left Southampton on December 3 with one of the British expeditions under the leadership of Mr. Alan Precious. After a short stay at Montevideo the vessel proceeded to Falkland Islands, South Shetland Islands, South Orkney Islands, and South Georgia and then went into the Weddell Sea to the British base of Halley Bay, where she arrived on January 29. The KISTA DAN returned on February 3 via South Georgia, Falkland Islands, and Montevideo, and was back in Southampton on March 19. Ice conditions in the Weddell Sea were fairly favourable and the ship carried out her voyage without difficulties.

The Polar Times

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No. 52. JUNE 1961.

Antarctic Explorers Report

By Herbert B. Nichols
The Christian Science Monitor
Washington

WITH the return to Washington of many United States Antarctic expedition leaders, news of what has been going on down in the frozen continent during the past season is beginning to spread.

Perhaps the most outstanding event of the year's activity was the selection and preparation of a bedrock site for a 1,500-kilowatt nuclear power plant to be installed next year at McMurdo Sound, the Naval Air Facility.

As part of the Navy's five-year plan for redevelopment of McMurdo and South Pole Stations, the $5,000,000 plant is expected to operate for 20 years. It should eliminate the need for much of the large volume of diesel oil now required for heat, light, and electric power.

The plant will permit even a limited use of electric space heating in lieu of less-safe, oil-fired heaters now used. Fire is an ever-present danger in the Antarctic, more feared there than elsewhere because of the relative isolation from help should it strike in midwinter.

Last December, a team of Seabees began excavation for a new station to replace the famous settlement at Byrd. The old one, completed in 1956, is collapsing under increasing loads of snow. The new station will be about five miles from the old.

A new construction technique will be used. It consists of cutting deep trenches in the snow with Swiss-made machines tradenamed "Peter Snowmillers." Metal arches roof the trenches and are then purposely covered with snow. Next, insulated buildings to house personnel are built inside the tunnels, where snow and ice cannot accumulate on flat roofs.

Meanwhile at sea, Capt. Edwin A. McDonald led icebreakers Glacier and Staten Island on America's second breakthrough of pack ice in the Amundsen-Bellingshausen Sea area, to duplicate and extend achievements of 1960 near Thurston Peninsula.

Before this second success in a row, Captain McDonald had experienced three failures in as many tries. These seas have a reputation for the hardest, most impenetrable sea-ice in the Antarctic, comparable only with that encountered in the Weddell Sea. Both seas fringe Marie Byrd Land, explored by air by the famed Admiral—but still unclaimed and almost unexplored by any nation.

The British ice survey, of FIDS (Falkland Island Dependency Service), long-time students of ice conditions in the Antarctic, says both United States expeditions were "lucky." The ice hasn't been so favorable since before the Belgian Expedition was trapped there for two years around the turn of the century.

About 40 hours after Glacier and Staten Island entered the pack early in February, they had passed through iceberg-studded sea ice 10 feet thick in places, to reach open water off the peninsula. They worked up and down the coast for several days, charting the "coastline," or ice-shelf front, glaciers, mountains, islands, and ice rises, believed to be islands.

Captain McDonald says there is no doubt in his mind now but what Thurston Peninsula is actually a large island, and the Eights coastline is considerably south of where it now is shown on the map.

In the midst of these operations, contact was established by helicopter with Dr. Charles Bentley and his geological traverse party that had traveled overland from Byrd Station.

Their final camp, Camp Minnesota, had been established by an earlier party at the southeastern end of the Walker mountains, some 30 miles from the ice front on the Bellingshausen. To find anyone there was a complete surprise.

Dr. Bentley had hoped to establish the existence of a Ross Sea - Bellingshausen Sea trough, for earlier work showed parts of the area studied to be some 2,000 meters below sea level. But that hypothesis has been complicated by the discovery of two subglacial areas en route.

No crevassed areas were found and no mountains sighted until the party neared the end of its trek. Mt. Tuve and Mt. Peterson were not in sight at their supposed locations. Continuation of field work in this area, using much of the temporarily abandoned equipment, is planned for late 1961.

Meanwhile over at Ellsworth Station on the Weddell Sea, the scientific crew had worked through two winter seasons on the ice without relief. Hence they cheered mightily when Argentina's icebreaker, the San Martin, hove in sight. A year ago ice conditions had been so bad the resupply party had been unable to get within 100 miles; finally gave up and went about its business relieving other Argentine stations.

Built by the United States in 1957, Ellsworth was turned over to Argentina for research projects of the Argentine Antarctic Institute (IAA) in 1959. One American, Lloyd Johnson of the United States Weather Bureau, was a member of the double-time wintering-over party.

According to Dr. Harry Dater, Antarctic Projects Office historian, and observer aboard the San Martin, "Argentina's operations plan for this season would admit no failure in relieving Ellsworth and Belgrano Stations" (about 35 miles apart).

With the sweep of Argentine-claimed Antarctica virtually constituting that nation's back yard, the Argentine Navy assigned four ships to Antarctic duty (a larger number than the Soviets used to take care of their six or seven manned stations). Argentina now is operating nine.

According to Dr. Dater the Argentines are able to conduct a very broad data-gathering program for short periods of time through their well-developed system of refuges or huts stocked with food and fuel, scattered throughout the sector. This past summer Argentina opened five, putting each into operating condition in about 10 hours, leaving small groups of four or five scientists behind to fend for themselves until the return trip three or four months later.

The Belgians, another energetic national expedition, were forced to close their Roi Baudouin station.

Admiral Richard Black, who was with the Belgians, missed by a matter of days spending his sixth Christmas on the ice. Climbing aboard the Erika Dann, a Norwegian ship used by the Belgians, he found no wintering-over party along, no plans to do much more than give some 19 scientists and 14 support personnel aboard an opportunity to work intensively for three weeks on a short summer research program — then pick up members of Belgium's third wintering-over party, at that time still on the ice, and head for home.

The Congo situation is held by some to have been responsible for Belgium's decision to pull out of the Antarctic at least temporarily, but this may not have been the paramount reason.

Admiral Black told the Antarctican Society here that Belgian researchers are most anxious to continue their Antarctic program and are hoping some "miracle" will make it possible for them to open "Roi Baudouin" again later this year or in 1962. Baron Gaston de Gerlache, long a patron of Belgian Antarctic exploration, hopes the buildings will still be useful, but Admiral Black found them already taking heavy stresses from the weight of the ice overhead.

The admiral found one of the most interesting parts of the Belgian program to be the deep-drilling operation. Some 117 meters of ice were penetrated to take temperature readings and bring up cores of ice dating back in time more than 300 years.

Another returning observer, Walter Boxell, who joined the Japanese expedition aboard the Soya Maru, described an unusually smooth operation — though the supply ship couldn't get anywhere near the Japanese Base at Showa.

From moorings as far as 67 miles out, helicopters were used to transfer supplies to the base. The ship was moored to a large flow on which a heliport (two husky planks) was established. Each load was carefully weighed and in a few days 52 tons were moved.

"They were running all the time," he said, "working 24 hours around the clock; pilots stayed in their 'copters hours on end, and operations halted only when the cloud ceiling dropped down to 300 feet." They wanted to reach a goal of 90 tons moved ashore and they actually moved 122.

After the work was done, a celebration was held, a huge party with streamers and tables loaded with food. The men were friendly, Mr. Boxell reported, always smiling—even when they talked about closing down their station at the end of next season. Somehow, like the Belgians, they still hope to keep it going—"perhaps with the help of United States, World No. 1 nation."

Fourth observer to return and report to the Antarctican Society was Erving Volbrecht, who visited the Australian stations of Mawson and Davis. As a meteorologist. Mr. Volbrecht paid most attention to this part of the Australian program, receiving much assistance from Philip Law of the Department of External Affairs. Mr. Volbrecht traveled aboard the chartered Danish ship Magga Dan with 24 replacements and an observer from India.

Mr. Volbrecht made a special point to question the Australians about why they go to such a barren spot as Antarctica. He found they had two major motives — "good pay" and "to get away from women." Among several minor motives, some wanted lots of skiing, others who were older said their children were grown up now and they wanted to complete long-standing research projects, or to get away and think. Some "just wanted to go."

HOOVER IS HONORED BY EXPLORERS CLUB

Former President Herbert Hoover reecived the Explorers Club medal April 26 for contributing to geographic knowledge in his early years as a mining and petroleum engineer.

At a $50-a-plate dinner in his honor at the Waldorf-Astoria Hotel the former president, who is 86 years old, said he was puzzled by the award.

Lowell Thomas, the newscaster and traveler, made the presentation.

Since the first Explorers Club Medal was awarded to Adm. Robert E. Peary in 1914, it has been bestowed only twenty-three times. Among other recipients are Dr. Stefansson, Adm. MacMillan, Gen. A. W. Greely, Roald Amundsen, Lincoln Ellsworth, Adm. Richard E. Byrd, Sir Hubert Wilkins, Dr. Roy Chapman Andrews, Dr. Isaiah Bowman, Col. Bernt Balchen, Auguste Piccard and Lawrence McKinley Gould.

Others honored Apr. 26 were Dr. Vilhjalmur Stefansson and Adm. Donald B. MacMillan, U. S. Navy (ret.), both Arctic explorers, who received scrolls commending them for their explorations.

HOME TO HONOR NANSEN

Norse Plan Refugee Shelter in Greece as Tribute

The Norwegian Refugee Council plans to establish a home for aged Armenian refugees in Greece as a tribute to the late Fridtjof Nansen, the noted Norwegian explorer, scientist, statesman and humanitarian, according to News of Norway, an official publication.

Nansen's 100th birthday anniversary will be commemorated next Oct. 15.

Hudson's Discovery

Jan Mayen, a Norwegian island in the Arctic Ocean, was discovered in 1607 by Henry Hudson.

The Polar Times

Published June and December by the AMERICAN POLAR SOCIETY, Care August Howard, Secretary, 98-20 62nd Drive (Apt. 7H), Rego Park 74, New York.

AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each.

Mountain Named For Neuberger

WASHINGTON, Jan. 13 (UPI). — The government today named a mountain in Alaska in honor of the late Sen. Richard L. Neuberger, D., Ore. The Interior Department's Board of Geographic Names said it had so designated the 6,747-foot mountain upon the joint request of Interior Secretary Fred A. Seaton, the Alaskan Congressional delegation and the Alaskan Legislature.

Remote Archipelago

The Kerguelen Archipelago is one of the few island-groups in the sub-Antartic Indian Ocean. It is midway between South Africa and Australia and about 1,000 miles north of Antarctica. Its islands, are scattered over about 125 miles from north to south and ninety miles east to west.

Antarctic Research

Under a contract from the National Science Foundation, we have commenced a survey for the Foundation's Office of Antarctic Programs of the location and nature of Antarctic information available to a person in the United States. We are seeking information sources of scientific, political and expedition significance. The information may be in the form of published reports, diaries, unpublished scientific data, expedition log books and other documents, telemeter tapes, biological, geological and similar specimens or artifacts. Information on available sources of earlier expeditions, as well as the more recent IGY and post-IGY programs, is desired. Further, the needs of the lay citizen, as well as the current Antarctic workers, are of interest to us.

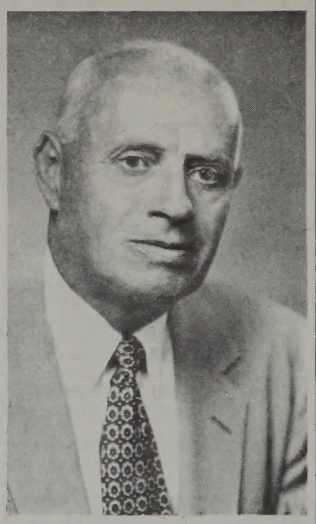
This letter is a plea for assistance in locating significant sources in places not primarily associated with the Antarctic.

If the information is available, we would appreciate (1) some indication of the type of material in the source cited, (2) an estimate of its volume and value, and (3) the circumstances under which this source became known to our correspondent. But in any event, we want to learn of unusual sources, even if part or none of the amplifying information listed above can be provided.

This survey will assist the National Science Foundation in evaluating ways in which the Antarctic community may be apprised of various information currently being made available by the U. S. Antarctic Research Program and also inform the community of previous information available to it. It is expected that the survey will result in a list of significant Antarctic collections and that this will be made available to all of those aiding us on sources of information.

Correspondence should be addressed "Antarctic Information Project, c/o Science Communication, Inc., 1079 Wisconsin ave., N.W., Washington 7, D. C." An early response will be particularly appreciated.

DeWitt O. Myatt.
President, Science Communication, Inc.



FREDERICK E MEINHOLTZ

TIMES NAMES AIDE

Henry Succeeds Meinholtz in Communications Post

The appointment of John I. Henry as director of communications of The New York Times was announced June 9. He succeeds Fred E. Meinholtz, who had been in the communications department since 1920 and had held the title of director since 1931.

Mr. Meinholtz will devote the rest of this year to writing a history of newspaper communications and will then retire.

Mr. Meinholtz was a pioneer in the development of short-wave radio broadcasting. He handled the communications for the North Pole expeditions of Amundsen and Byrd and was radio consultant for the Byrd Antarctic expedition in 1928.

JULY 10 CONFERENCE ON ANTARCTIC IS SET

CANBERRA, Australia, June 24 (Reuters)—The twelve Antarctic Treaty nations will hold their first consultative meeting here July 10, it was announced today.

The Antarctic Treaty, signed in Washington in December, 1959, reserves the ice-covered continent for peaceful purposes and forbids military activity there.

The treaty nations are the United States, the Soviet Union, Britain, France, Japan, Belgium, Norway, New Zealand, South Africa, Australia, Argentina and Chile.

Since the treaty was signed, representatives of the twelve nations have held frequent informal meetings in Washington. But the Canberra meeting is expected to provide the first real indication as to what extent the twelve nations are prepared to disregard their political differences in making the treaty work.

Questions that could produce controversy with political overtones include whether there should be a permanent secretariat to administer the treaty, and the procedure for inspection of activities in the Antarctic.

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2 Scouts Tell Of 5 Months Under Snow

Lived in Army Camp Below Arctic Ice Cap

Apr. 6
The Christian Science Monitor

Two Scouts have just come back from Greenland, 800 miles from the North Pole, where for five months they helped the United States Army in exploring the Arctic.

What did they do? Build fires, pitch tents, blaze trails, find water? Was it rough?

Reporters, whether ex-Boy Scouts or not, held ballpoints ready for a tale of the wild.

The two youthful explorers, Kent L. Goering, 18, of Neodesha, Kan., and Soren Gregersen, also 18, of Korsor, Denmark, a citizen of the nation which plays host to the Army in Greenland, displayed the smiles of men who have been asked one primitive question too many about a complex subject.

In their capacity as guest junior scientific aides to the United States Army Corps of Engineers research city, Camp Century, Greenland, they reported they learned how to:

- Find water—by boring into the thick ice with huge steam drills. The water being melted in subterranean caves that way was found purer than distilled water; the ice from which it is made has lain unexposed for centuries.
- Blaze trails across the ice—with parallel wires, buried in the snow, which broadcast signals that keep surface vehicles on course even when Arctic fog or wind-driven snow cuts visibility to zero.
- Build "fires"—by learning how to operate the master control of a portable atomic reactor which saves the need for hauling in huge quantities of diesel fuel for heat and power.
- Build shelters—by excavating huge trenches (with special tractors) similar to the way modern coal mines are dug. Inside the trenches complete barracks are erected and afterward the trenches are covered with corrugated metal roofs and the snow is blown back on with machines.
- Find ways to store gasoline, machinery, and other supplies in unlined ice reservoirs. Gas can be pumped into the ice caverns without losing its quality. Tools can be stored without rusting.

There was at least one touch of the old Scout life, though.

The boys built an igloo, cutting the ice slabs "with machetes." They slept in it one night when the temperature was 64 below zero outside, 30 inside.

Soren Gregersen (left) and Kent L. Goering point out their old stamping ground on map.

"We took off our Arctic wear and went into double sleeping bags, in our underwear," said Kent. "We slept all right."

Nor was this all just a Scout experience, however modern.

Both boys are interested in natural science and technology. Kent "probably" wants to become an engineer, Soren, a nuclear physicist.

"I was pretty sure of that before I left for Greenland," he said. "Now I am sure."

This summer, Kent plans to return to Greenland to work as a scientific assistant.

GIANT ICE DRILL IN USE

Army Is Probing Greenland Glaciers With New Device

CHICAGO (AP)—A Chicago engineering concern has designed and built the world's largest ice pick to plumb the mysteries of glaciers.

The United States Army Corps of Engineers received delivery of a twenty-three-foot-long thermal drill that melts its way into a glacier and brings up ten-foot ice cores for study. It can go down 12,000 feet deeper than man has ever penetrated ice before.

The drill is now being used in Greenland to obtain facts that will be useful for the construction of military outposts in polar regions.

ICE AVALANCHE KILLS 4

29 Hurt in Sightseeing Trip Near Greenland Air Base

COLORADO SPRINGS, Colo., June 26 (UPI)—The Air Defense Command said today that four men were killed and twenty-nine others injured yesterday when a huge chunk of glacier crashed down on them at the edge of the Greenland ice cap near Sondrestrom Air Base.

The air headquarters here said only two men out of thirty-five on a sightseeing tour escaped injury when the ice plunged down the side of Russell Glacier into a fiord, setting off a small avalanche.

The four victims were not identified, pending notification of kin.

Sondrestrom is on the west coast of Greenland at the Arctic Circle. It supports Strategic Air Command radar stations. It also is used by commercial airlines.

Discoveries of Spitsbergen

Spitsbergen, an island group 400 miles north of Norway, is believed to have been discovered by Vikings in 1194. Few Europeans knew it existed until it was rediscovered in 1596 by Willem Barents, a Dutch explorer.

DEW LINE EXTENDED TO CROSS ATLANTIC

The New York Times.

WASHINGTON, May 31—The $500,000,000 Distant Early Warning (DEW) Line of radar and electronic defenses has been extended across the Atlantic, the Pentagon announced today.

Starting tomorrow Canadian-American air defenses will be enlarged with the operation of four DEW Line stations in Greenland, 1,200 miles east of the existing antiaircraft radar shield in Northeast Canada.

The extension of the DEW line underscored the continued concern of defense leaders over the threat of manned bombers even in an age of ballistic missiles.

The DEW Line was constructed for the most part in the northern reaches of Canada and Alaska. It provides little protection against missiles, but the United States is also building a Ballistic Missile Early Warning System with huge radar stations in the United Kingdom, Greenland and Alaska.

PLANKTON STUDIED

Samples Are the 1st Collected by Submarine Under Pole

WOODS HOLE, Mass. (Science Service)—The first plankton samples collected by a submarine under polar ice are now being studied by scientists in the United States.

The scientists are trying to determine the area where the marine life of the North Atlantic begins to mingle with that of the North Pacific.

Dr. George D. Grice, marine biologist at Woods Hole Oceanographic Institution here, and Dr. John Mohr, biologist at the University of Southern California, Los Angeles, are analyzing plankton, minute marine plant and animal organisms, collected last summer by the nuclear submarine Seadragon during its voyage under the ice of the North Pole.

The samples were collected by an automatic sampling device built for the trip and attached to the submarine's conning tower.

In the past, plankton samples from underneath the ice were obtained by lowering nets through holes drilled through the ice.

World's Sea Level Rising

The average sea level over most of the world is rising, the Smithsonian Institution says. Between 1930 and 1949, for instance, it rose nearly four inches on the Atlantic Coast of the United States, because of the melting of glaciers and polar ice.

COLD WAR DIVIDES 2 ESKIMO ISLANDS

U. S. and Soviet Diomedes, 3 Miles Apart, Separated by an Iron Curtain

WASHINGTON — An Iron Curtain more impenetrable than the one in Europe divides two Eskimo islands less than three miles apart in the Bering Strait, according to the National Geographic Society.

One island, Little Diomede, is part of Alaska and belongs to the United States. The other, Big Diomede, belongs to the Soviet Union. The curtain came down between them in 1948 when eighteen Eskimos from the American island were arrested for trading cigarettes, tea and flour for Siberian pelts on Big Diomede.

Thus the cold war brought to an end a long period of friendship and common traditions. For centuries the Eskimos had traveled back and forth in their umiaks, or skin boats, to trade and visit. Now they are isolated from each other in two different hemispheres. They even live in a different time, because the International Date Line separates the islands.

Both Diomedes are rocky, treeless, windswept peaks protruding from the waters of the strait. In 1867 Russia sold Little Diomede and the rest of Alaska to the United States but retained Big Diomede.

About 100 islanders live in Ignaluk, the only village on Little Diomede. Along the steep cobblestone streets are houses clinging to a boulder-strewn slope. Unlike most Eskimo dwellings, Diomede houses are built of rocks. The roofs are made of walrus skin.

Inside their weatherproof homes, the Eskimos play popular American songs on phonographs and thumb mail-order catalogues. But they have not forgotten the drum music and vigorous dances of their ancestors. On special occasions, the entire population crowds into the village school to chant and perform.

During the long winter months, when Arctic ic epresses against Little Diomede, the villagers hunt walruses, seals, whales and bears with rifles.

In summer they desert Ignaluk for Kotzebue, a town on the mainland of northwestern Alaska. There they set up a handicraft business, carving walrus tusks into bracelets, letter openers, cribbage boards and animal figures. Some men take part-time construction jobs.

Not much is known of Big Diomede. According to unconfirmed reports, the Russians have installed a large weather station on their island.

The American Eskimos suspect they are constantly being watched. In the summer of 1956, while the inhabitants were away in Kotzebue, unknown persons landed on Little Diomede, left foreign cigarettes and consumed the school's store of food.

The two islands have served as steppingstones between Asia and America since the Ice Age, but the Bering Strait was not known to Westerners until Vitus Bering, a Danish explorer employed by Russia's Peter the Great, spotted the black mountain caps through fog Aug. 16, 1725.

New Ice Island Found in Arctic; Big Rock Piles Stud Its Surface

By WALTER SULLIVAN
The New York Times.

May 28

A remarkable ice island bearing rocks that are heaped fifty feet high in places has been found adrift in the Arctic Ocean.

The Navy has already established a scientific station on the island, discovered last week. Known as ARLIS II, it bids fair to replace T-3, also called Fletcher's Ice Island, as a drifting platform for observations near the North Pole.

T-3 has been occupied, on and off, for the last nine years but is now aground northeast of Point Barrow. Most of the inhabitants of its twenty or more huts have been evacuated, although the Air Force has left a skeleton crew.

The new ice island is roughly 150 miles north and slightly east of Point Barrow, site of the Navy's Arctic Research Laboratory. It was the laboratory's director, Max Brewer, who discovered it.

An ice island is much thicker than the floes that cover most of the Arctic Ocean. T-3 is about 150 feet thick and some forty square miles in area.

Several such islands showed up on the radars of Alaska-based Air Force planes after World War II and were given numerical designations. Although they drifted with wind and current, they were the only "landmarks" in the vast reaches of the Arctic Ocean.

T-1 was the largest, being some 300 square miles in area. The Russians occupied another, only thirty or forty feet thick, during the International Geophysical Year of 1957-58. Most if not all of these islands seem to have broken off from a semipermanent shelf of ice attached to the north coast of Ellesmere Island in the Canadian Arctic.

The new island if fifty feet thick, two miles wide and three-and-one-quarter miles long. It seems to lie squarely in the current that, from 1952 to 1954, carried T-3 in a huge, clockwise circle, passing within 120 miles of the Pole and floating back close to its presumed birthplace on Ellesmere Island.

The New York Times May 29, 1961
Navy establishes a station on floe in the Arctic (cross).

While boulders have been found on ice islands, no heaps like those on ARLIS II appear to have been seen before. Some of the boulders are six feet in diameter. The find is of "tremendous interest," according to Dr. Louis O. Quam, director of the Earth Sciences Division of the Office of Naval Research.

His division is in charge of the Navy's Arctic research work, with Dr. Max E. Britton in immediate charge.

Dr. Quam believes that a moraine—an accumulation of earth, stones and so forth carried and finally deposited by a glacier—may have been imbedded in the ice when it broke off from shore. A glacier often chews into a mountainside and picks up rock, which it carries along until it terminates in a valley, leaving a terminal moraine, or until the river of ice discharges into the sea, generating icebergs. Most bergs of this type are born in Greenland's fiords and are carried into the Atlantic rather than the Arctic Ocean.

Sometimes, especially in the Antarctic, a glacier may push out to sea as a floating tongue or shelf of ice. It is from such a formation that this ice island may have been born.

One of the most puzzling discoveries of the geographical year was the existence of many large boulders lying on top of the sediment on the floor of the Arctic Ocean.

How these rocks were carried so far from shore seemed a mystery. The number being rafted on the ice islands seemed to be negligible, but this view must now be altered, Dr. Quam believes.

ARLIS II stands for Arctic Research Laboratory Ice Station II. ARLIS I was established last year on a comparatively thin, fragile floe north of Barrow. It was abandoned last March when the floe began to break up.

The ARLIS stations represent a new approach to observations afloat in the Arctic. Earlier American drifting stations, such as T-3, have required elaborate air operations for which landing strips had to be bulldozed. Mr. Brewer has designed a prefabricated hut that can be loaded onto twin-engine ski planes and landed without benefit of an airstrip. The stations have been kept small, with the result that the cost, according to Dr. Quam, is about one-tenth of the big I. G. Y. stations. He said in a telephone interview yesterday that about ten men were already at ARLIS II, with several more expected.

ARMY WAGES 'WAR,' BUT NOT ON CARIBOU

GULKANA, Alaska (Reuters) —An unexpected tactical problem that Army commanders were called upon to solve during the 10-day Willow Freeze maneuvers in February was the presence of roaming caribou.

Marching in search of the reindeer moss that is their food, the caribou roamed right into the thick of the "battle" in which 6,500 troops and paratroops of the United States Army were learning to fight in temperatures as low as 40 degrees below zero.

All possible precautions were taken to protect the animals, part of a herd of about 50,000. Their movements were plotted at operations headquarters and reconnaissance flights were made over the 2,100-square-mile battle zone in the Copper River Basin to discover their position and ascertain the speed of their movement. Two men from the Fish and Wildlife Service also went upon caribou-spotting missions.

At the same time, precautions were taken to protect moose, snowshoe rabbits, ptarmigan and other creatures in the combat zone as well as the caribou.

Neither animals, snowdrifts nor extreme cold stopped the "aggressor" and "friendly" forces waging their Arctic war.

Alaska Highway's Length

About 1,200 miles of the 1,500-mile Alaskan Highway lie within Canada.

MINK MIGHT SOLVE SEA LION PROBLEM

Bering Sea Nuisance Held Good Source of Food

By DAVID HALBERSTAM
The New York Times.

WASHINGTON, June 24—The Steller's sea lion, which has been harassing Bering Sea fishermen for generations, has been given a new and valid reason to roar. The Interior Department has recommended that he be turned into mink food.

The sea lion, 2,000 playful pounds of him, has long been the scourge of halibut, herring and salmon fishermen in Alaskan waters. He gets into fishermen's nets, tears up their equipment, and eats their catch.

The problem, as far as the department is concerned, is not whether or not to kill the lion, but how to sell the carcass after the kill. This week the department's Bureau of Commercial Fisheries reported that it had the answer.

An experimental harvest of lion meat, it said, yielded 200 tons of hig-protein ground meat, which was sold through commercial channels to mink farmers. The report said the lion meat turned out to be excellent mink food.

"There was a big demand," the report said. It proposed a new commercial industry designed to turn the lions into the mink food and foresaw a bright commercial future for the industry.

There are about 150,000 sea lions in Alaskan waters. The department said it did not want to annihilate the lions, but to bring the number into balance. It gave no preferred total for the lions.

Each lion weighs about 2,000 pounds. The department noted that each had about 419 pounds of meat yield on him, plus 39 pounds of liver.

With the going market rate 10 cents a pound for the meat and 12 cents a pound for the liver, the value of each lion on the market place would be $46.48.

Sea lion meat is reliably reported here to be foul tasting. The department did not deal with this in the report.

"We don't know how the mink would feel about that," according to John Hodge, Chief of the Branch of Resource Management in the Bureau of Commerical Fisheries.

But he noted that the mink farmers were delighted with the high protein composition of the lion meat—the better with which to turn out good fur. Sea lion meat is 73 per cent water, 5 per cent fat, and more than 20 per cent protein. Lion fur, unlike mink fur, has little value.

The report suggested that the lions be killed during the breeding season, when they occupy the rookeries along the windswept Alaskan Peninsula. At this time the lions are more fearless and can be approached by men. The report suggested that the industry use large refrigerated ships in the lion area, and that the men hunt from smaller ships.

Most of the lions killed during experiments were harem bulls, lions that keep a flock of females around them. But the report said that there was no problem of running down the breed, since as soon as a harem bull was killed, a bachelor bull moved into his place.

"The bachelor bulls are the males who stay around the herd, but who haven't been man enough to run the females," Mr. Hodge explained.

ALASKANS TAKE TO AIR

FAIRBANKS, Alaska (AP)—Air-minded Alaskans fly a great deal and figures might seem to show that every person here flew south to Seattle once in 1960 and returned.

Pan American World Airways reports its Boeing 707 intercontinental jets carried 24,000 passengers to and from Seattle the first year.

The population of the Fairbanks area is only about 12,000.

ESKIMO HUNTERS BATTLE A TREATY

Alaskans Protest Compact That Limits Their Season

The New York Times.

FAIRBANKS, Alaska, June 10—Six hundred pounds of ducks and geese are resting in a cold storage locker here while Federal and state officials try to resolve a conflict between Alaskan Eskimos' ancient hunting rights and United States treaty obligations.

Agents of the United States Fish and Wildlife Service confiscated the birds and the hunting rifles of 138 Point Barrow villagers, who brought in the fowl and signed voluntary admissions of guilt to charges of hunting out of season.

The dispute flared at a mass meeting after two nunters were arrested for violating the closed season on migratory waterfowl. The season opens in September, after most of the birds have flown south.

"Since this is a violation of international treaty this matter will be studied in great detail before the United States Attorney's office makes any decision as to what action it will take," said Jerry Shortell, Assistant United States Attorney in Fairbanks.

In Juneau Gov. William A. Egan said he had written Secretary of the Interior Stewart L. Udall to see if the Federal Government could permit Eskimos to take waterfowl for food purposes at any time of year. Otherwise, the Governor said, welfare costs to provide food for Arctic villages could increase by about $150,000 a year.

The treaty involved is one of 1916, signed by the United States, Mexico and Britain, acting for Canada. The Alaska Governor said that, from his reading, the treaty appeared flexible and gave the Secretary of the Interior great latitude in affairs concerning the Point Barrow hunters.

Harry Pinkham, Federal game agent, returned to Fairbanks last week with nine sacks of the confiscated ducks and geese. He received the fowl at his hotel after the protest meeting. Each of the 138 men carried a duck or goose.

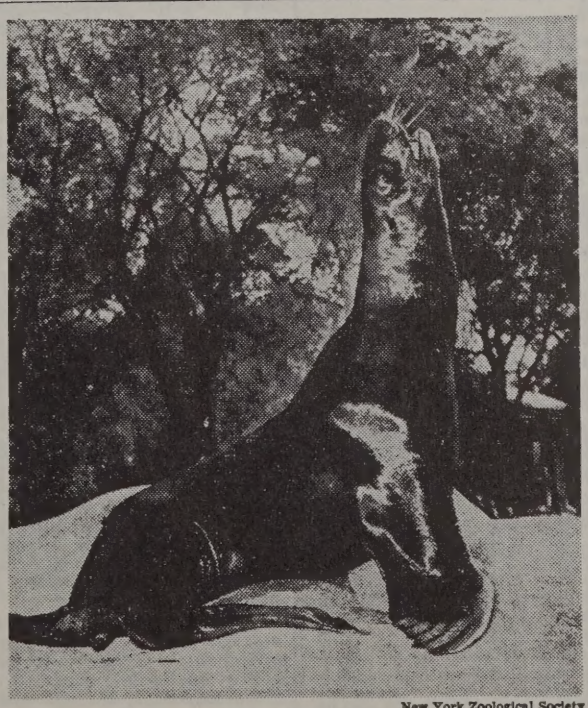
Open defiance by the Eskimos began after Mr. Pinkham had apprehended two Eskimo hunters. One, Tom Pikok, was arrested May 20. The other, John Nusunginya, Barrow's member of the state Legislature, was arrested May 28.

According to Guy. Okakok, Eskimo correspondent for The Fairbanks Daily News-Miner, virtually the whole village turned out for the mass meeting May 29. It ended with the trooping to the hotel to waken the game agent and admit guilt.

As Mr. Okakok put it in his column in the Fairbanks paper:

"September is awful late for ducks, that is they are very few then when they turned South homeward. Natives this far north do hunt in 40 and 50 below zero, in hunger sometimes. We people then would come home empty-handed sometimes. We do not raise crops either. Why? Because our climate up North is cold. Yet when the ducks arrives through us all we do is start shooting them. Sometimes we even store what we could in our cellars. There's no waste on ducks. Every piece from duck they don't touch or eat is feathers, that's fact. Why don't they realize that the kids and family depend on meat?"

Mr. Okakok explained that when the ducks start flying in the Arctic, they come by the "millions and millions." By September their numbers have slackened and there are not enough for food.



New York Zoological Society

NO FRIEND TO FISHERMEN: Sea lions like this one, of the Steller's variety, have been eating the fish netted by fishermen in Alaskan waters for a long time. The Interior Department has proposed action against them.

Midnight Sun in Barrow

BARROW, Alaska, May 10—The sun set here at 11:46 P. M. yesterday. The next sunset will be Aug. 2. The Midnight Sun has taken over at Barrow, the northernmost community in the United States. Barrow's latitude is more than 71 degrees north of the Equator. Barrow has an equally long period of sunless days during the winter.

A.E.C. BACKS PLAN FOR ALASKA BLAST

It Denies Fall-Out Hazard Is Likely in Experiment

The New York Times.

WASHINGTON, June 8—The Atomic Energy Commission entered the debate today over the use of atomic explosives to carve out a harbor in Northwestern Alaska. Its argument was that there would be no danger from radioactive fall-out.

The commission issued a report, prepared by a special scientific committee, that concluded that the experiment could probably be conducted without hazard to plant and animal life in the Arctic region.

The report placed the commission in general opposition to a committee of scientists and laymen in St. Louis known as the Committee for Nuclear Information. Last Saturday the St. Louis group issued its own study of the safety of the Alaska project and came to the conclusion there might be hidden dangers of radioactive contamination of the food chain in Alaska.

Because of the gloomy turn of events in the test-ban negotiations in Geneva, the developing debate may turn into more than an abstract discussion.

If the talks collapse, the commission wants to get under way with its program, known as Project Plowshare, to demonstrate the peaceful uses of atomic explosives. The proposal to use atomic explosives to dig a harbor at Cape Thompson on the northwest coast of Alaska above the Arctic Circle is one of the key features of this program.

The report was the first comprehensive technical study issued by the commission on the bio-environmental problems of conducting the Alaska harbor project, called Project Chariot. The report was prepared by the Committee on Environmental Studies for Project Chariot—a scientific group created by the commission in 1959—and it was based on more than thirty studies made in the last two years of plant and animal life in the remote Arctic region.

The reports of the commission committee and the St. Louis group were based largely on the same scientific surveys, but they came to contrary conclusions in several important respects.

In assessing the possible radiation effects on plant and animal life, the commission committee reached this conclusion:

"Considering the predicted distribution and characteristics of fall-out, morphological abnormalities, pathological effects or population changes as a result of radiation are not expected to occur in the biota [plant and animal life] of the environment beyond the throw-out area."

"It would appear," the committee said, that radiation effects "would be negligible, undetectable, or possibly nonexistent in areas distant from the excavation."

The commission report did not deal with one of the key points considered in the St. Louis group's study. This was the particular affinity of lichens, which gain their nourishment from dust in the air, to absorb fall-out material, such as strontium 90. Since caribou feed on lichens and Eskimos on caribou, the St. Louis group pointed out there was a danger that fall-out from the explosion could contaminate the food chain leading from plants to humans.

Mrs. Kennedy Finds a Historical Desk for President

By BESS FURMAN

The New York Times

WASHINGTON, Feb. 6—A desk made from the timbers of the British ship Resolute and used by many Presidents has been installed in President Kennedy's office by Mrs. Kennedy. The White House announced this today in a release headed: "Discovery of the Table Desk from H. M. S. Resolute." It said that Mrs. Kennedy, while exploring all the rooms and familiarizing herself with their contents and backgrounds, had recently made "a most interesting discovery." In the broadcasting room, "she came upon a massive, richly carved table desk," most of it "obscured by a covering of green baize," the account continued.

"The desk has been used for cameras when films were shown in the broadcast room," it went on. "The baize had been thrown over the desk to protect its surface, and held in place by scotch tape.

"In removing the baize, she found that the desk was in perfect condition, and on it was the following inscription, chiseled in black letters on a gold background set into the carving:

"'H. M. S. Resolute forming part of the expedition set in search of Sir John Franklin in 1852 was abandoned in Latitude 74.41. N., Longitude 101.22. W. on 15 May 1854. She was discovered and extricated in Sept. 1855 in Latitude 67. N by Captain Buddington of the United States whaler George Henry.

"'The ship was purchased fitted out and sent to England as a gift to Her Majesty Queen Victoria by the President and people of the United States, as a token of goodwill and friendship. This table was made from her timbers when she was broken up and is presented by the Queen of Great Britain and Ireland to the President of the United States as a memorial of the courtesy and loving kindness which dictated the offer of the Resolute.'"

Sir John Franklin led an illfated Arctic expedition in search of the Northwest Passage.

Several search groups, starting in 1848, failed to locate the Franklin party, but in 1859 a party sent out by Sir John's widow discovered remains of the expedition, including a partial record of its misfortunes.

Sir John, who perished June 11, 1847, was credited with having discovered the passage.

The desk has been a well-known piece of White House furniture since it was given to President Hayes in 1878.

The White House announcement said:

"Feeling that the desk, with its connection with the sea, would perfectly complement the naval battle scenes and the model of the Constitution which she already had secured at her husband's suggestion, Mrs. Kennedy has given the desk to the President and it was placed in his office on Saturday, Feb. 4."

It added that the President was "delighted" by her discovery and the return of the desk "to a place of honor in the White House."

Rummaging in White House basement, Jackie Kennedy found 83-year-old desk made from timbers of British ship, moved it to President's office.

ALASKA HONORS RUSSIAN

Pageant to Depict Baranof Role in Settlement

JUNEAU, Alaska (UPI)—While the rest of the United States is observing the 100th anniversary of the Civil War, Alaskans this year are paying homage to Alexander Baranof, the Russian "Lord of Alaska."

The reason given by the Alaska Division of Tourism here is simply that while all the fighting was going on down south, Alaska was still under the jurisdiction of Czarist Russia.

So the forty-ninth state instead will present an historical pageant depicting Baranof's important part in the settling of Alaska.

Baranof left Russia in 1791 to manage the North American operations of a Russian trading colony on Kodiak Island.

He stayed on, through near-mutiny and Indian massacres, to earn the title of "Lord of Alaska." He was also responsible for the expansion of the Russian operations as far south as Fort Ross, Calif.

SNOW A SURVIVAL DIET

Research Team in Alaska Tells of Foodless Test

STANFORD, Calif. (UPI)—If one is stranded on the tundra and carefully rations his energy, he can live on melted snow.

This was discovered by a team of Stanford University physiology researchers after nine men spent five foodless days in Alaska testing the hypothesis.

The group reported, however, that hunger made them irritable and blunted their powers of concentration.

British Ships to Probe Ice

LONDON, March 29 (AP)—The British Admiralty announced that today two of its submarines, the Finwhale and the Amphion, have set out for an experimental voyage under the Arctic ice cap. The ships are equipped with an "ice eye" to seek thin spots in the ice through which snorkel tubes can be projected to take in fresh air.

MIGRATION BETTERS LOT OF 115 ESKIMOS

CHURCHILL, Man. (Canadian Press) — Eskimos who moved to the shore of Hudson Bay from the starvation-haunted barren lands are reported to be making a success of their new settlement.

R. I. Kennedy, administrator of the Northern Affairs Department base here, said about 115 Eskimos now at the coastal settlement of Whale Cove are "a pretty strong group."

The settlers of Whale Cove, 250 miles north of this port on the west shore of the bay, are Eskimos from the inland areas around Henik Lake and Garry Lake. The vagaries of the caribou migration and the decline of the barren-lands caribou in recent years led to death by starvation for nine Garry Lake Eskimos in the winter of 1958.

Eskimos from Henik Lake, northwest of Whale Cove, first moved to the new settlement in the summer of 1958. They were joined later by Garry Lake Eskimos who had been moved from territory 525 miles northwest of Churchill by the Government.

"They're pretty well able to look after themselves," Mr. Kennedy said. "They're getting a lot of food and they're storing a lot of food."

Hunting, trapping and fishing have yielded seals, whales and caribou.

ESKIMO, LAPLANDER SEEN AS NEIGHBORS

MONTREAL (Canadian Press)—A young Swedish anthropologist is taking a close look at the theory that Canadian Eskimos and the Laplanders living in Finland, Norway and Sweden once were next-door neighbors.

Rolf Kjellstrom, studying this winter at McGill University in preparation for further examination of the theory, hopes to head north and live for several months in an Eskimo settlement. Before coming to Canada on a Canada Council scholarship, he lived for eight months in a Lapland village.

The theory hinges on the possibility that both groups came from Russia. The Eskimos are presumed to have migrated to the east, entering North America over the Bering Strait between Alaska and Russia and eventually spreading as far east as Greenland.

The Laplanders, according to the theory, moved west, settling in the northern reaches of the Scandinavian countries.

Mr. Kjellstrom, making a comparative study of the two groups, says both now number about 40,000.

Canada Hurriedly Looks to Its North

The Christian Science Monitor

Concerned over the extent to which the Soviets have probed Canada's polar continental shelf, the Canadian Government now is accelerating its scientific investigations in polar regions to unprecedented proportions and with grim determination.

The purpose of these investigations this year is to assess the mineral wealth of the country's polar regions and to learn more about the areas for defense purposes. Some of the areas are believed to contain vast reserves of crude oil and natural gas.

More than $1,500,000 has been earmarked for this work this year, and already about 70 scientists and supporting personnel have been assigned to the project.

This polar continental shelf project, in which the extension of Canada into the Arctic is being meticulously examined, is the largest field study ever undertaken by a Canadian Government department. For the next few months it will be supported by the biggest airlift of its kind in this country.

The first members of the 70-man scientific team engaged on the project recently flew to Isachsen on the rim of the polar basin, the advance group including Dr. Ernest Fred Roots, coordinator of the entire project. Other groups will be leaving at intervals until midsummer.

The investigational field work must conclude early in September, when severe blizzards and unbearable temperatures begin hitting the polar regions. The scientists then will return to their regular headquarters in southern Canada to assemble their various findings, study them, and try to draw conclusions.

This is Canada's third and largest annual expedition into the polar basin, and it is expected to yield many significant discoveries.

At the same time, it is expected to shorten the lead the U.S.S.R. is believed to have over Canada in knowledge of this country's polar areas.

Most of Canada's findings on the project are being shared with the United States.

While preferring not to be identified, some high-ranking Canadian Government scientists readily concede: "Russian scientists know more about our far north than we do. We have to admit that because of the facts they have been telling us about our polar basin. Of course, we know they've been poking around up there for a long time."

Such admissions do not ease the worries of Canadian officials concerned with the join defense of this continent with the United States.

Stressing the importance of this year's polar continental shelf project by his department the other day, Paul Comtois, Canada's Minister of Mines and Technical Surveys, explained: "The Arctic has become a vital factor in our lives today, and we have no time to lose in overcoming our ignorance of our polar regions both for resources and defense purposes."

The expeditions now streaming into the icy and rocky barrens will be based at Isachsen on Ellef Ringnes Island, about 2,000 miles north of the Canadian prairie metropolis of Winnipeg. Field work this year will be conducted in an area within a 150-mile radius of Isachsen.

Members of the expedition will include oceanographers, hydrographers, geologists, geophysicists, and geographers.

Besides studying the polar continental shelf, they will study the northern archipelago and adjacent waters.

In the field, the expedition will be supported by three planes and four helicopters. A fourth plane will be used for low-level aero-magnetic surveys to pinpoint mineral-bearing areas around Ellef Ringnes Island.

More than 700 tons of equipment and supplies for the main base will range from food and gasoline to delicate scientific instruments. All are being flown to Isachsen from Atberta's capital city of Edmonton and from Churchill in northeastern Manitoba on the western shores of Hudson Bay.

The helicopters are being moved to Isachsen in freighter aircraft from Montreal.

TINY STOVE DEVELOPED

Army Device to Enable Men to Heat Rations in Field

A pocket-size, lightweight, gasoline-burning stove has been developed by the United States Army Quartermaster Corps for individual soldiers to heat rations in the field, according to Army News Briefs, a publication of the First Army.

The tiny stove weighs one pound and measures six inches by three inches. It works in temperatures ranging from minus 60 to plus 125 degrees Fahrenheit.

Group to Start Glacial Study In the Yukon

June 15

A long-range program to study the complete environment of glaciers will begin next Wednesday in the Yukon, the American Geographical Society announced

The program is sponsored by the Society, whose headquarters are at Broadway and 156th St., and the Arctic Institute of North America, a non-profit Canadian-American corporation engaged in studies of the north. It will take place in the St. Elias Mountains, on the border between the Yukon and Alaska near the Gulf of Alaska.

The area was chosen because it includes five of the longest glaciers outside the polar regions, such as the seventy-five-mile Hubbard Glacier.

A field party made up of Institute staff members and led by Dr. Walter A. Wood, president of the Society, will set up a base camp at Kluane Lake, 120 miles west of Whitehorse. Using an abandoned air strip, the party will fly supplies into the Icefield Ranges of the mountains and make reconnaissance studies.

The long-range glacial study will investigate the region's climate, geology and botany in an effort to learn more about the earth's Ice Age and its more ancient history. A secondary object of the program is to stimulate young scientists to choose glaciology as a field of study.

ARCTIC PROBES WEIGHED

Canadian Icebreakers May Cross Untraveled Areas

The possibility of carrying out one or two traverses of areas in the arctic archipelago that have not previously been sailed is being considered by the Canadian Department of Transport, the Canadian Weekly Bulletin, an official publication, reports.

Such a program, if carried out, will be an extension of research work that has been done with the department's Canadian Marine Service icebreakers during the past several summers when they were not required to support arctic supply convoys.

These probes will be for the purpose of extending knowledge of the hydrography of the channels in the High Arctic islands and for determining the limits within which it is possible to operate icebreakers.

Alaska Herd Of Musk Ox Is Thriving

WASHINGTON, Jan. 14 (UPI) —The herd of wild musk ox on Nunivak Island is building up, the Fish and Wildlife Service reports, after an aerial survey of the 1,000,000-acre wildlife refuge.

The herd now contains 256 of the stocky, buffalo-like animals. The previous count was 199. The fifty-seven calves spotted represents an increase of 24 per cent for a year.

Musk ox by the thousands once roamed the Arctic region between the tree line to the south and the permanent icecap to the north. Their meat and robes were an important source of commerce in the frozen North. But progress in the form of firearms, proved disastrous. By 1867 the last musk ox west of Point Barrow had been exterminated.

Canada established refuges to preserve that country's residual herds and to foster repopulation of former ranges. In 1930, Congress appropriated $40,000 to purchase a small herd and establish it in Alaska.

The former Bureau of Biological Survey took two months to bring thirty-one musk ox 14,000 miles from Greenland to a 4,000-acre enclosure at the college experimental farm near Fairbanks.

Because the musk ox was both difficult and dangerous to handle, the entire herd was moved in 1935 and 1936 to the Nunivak Island National Wildlife Refuge in the Bering Sea. Nunivak is some twenty-five miles off the Alaska mainland and a little south of the mouth of the Yukon. It is about fifty miles wide and seventy miles long. It is uninhabited except for a few Eskimos. The Fish and Wildlife Service said there are no predatory animals there.

For many years the rate of increase among the musk ox was so affected by small but regular losses that the original herd of thirty-one had increased by only eighteen head in 1945. Since then, gains have been rapid, reaching 126 by 1956 and more than doubling that number by 1960.

In the main, rebuilding a musk ox herd is slow business. A musk ox does not breed until its fourth or fifth year, and only one calf is produced each year, generally in April or early May.

The musk ox does not thrive on a temperate climate. It is related to wild and domestic cattle but it is generally smaller than most breeds. Mature animals weigh around 500 pounds. Some of the old animals have reached 900 pounds.

WHITES TIE ESKIMOS IN COLD RESISTANCE

OTTAWA (Canadian Press) —An international scientific team headed by a Canadian has found that the Arctic's coastal Eskimas have little more resistance to cold than white men although the Eskimos have lived in sub-zero temperatures for perhaps 4,000 years.

This conclusion was reached by ten biologists from Canada, the United States and Norway after a series of tests at Pangnirtung on Baffin Island, 1,500 miles north of Ottawa.

The Eskimos tested were not much different from the white men in adapting themselves to cold, according to Dr. J. S. Hart, the 44-year-old head of the expedition.

Dr. Hart, chief of the animal physiology section of the Canadian National Research Council's Applied Biology Division, said Eskimos of the Pangnirtung area insulated themselves from the cold—like the white man—with warm housing and clothing. Probably as a result of this, he reported, no marked physiological differences were found that made them superior to the white man in resistance to cold.

This finding contrasts with the results of tests conducted on Australian aborigines in 1957. A scientific team of which Dr. Hart was a member found that these natives were able to allow their bodies to cool without discomfort as the temperature dropped.

The Pangnirtung tests were conducted in the spring of 1960. The material collected, however, has only recently been analysed.

The study formed part of an international research program to determine man's adaptability to cold. Information gained may enable scientists to make life more comfortable for people who must live in areas with sub-zero temperatures the greater part of the year.

Magnetic Pole Has Moved

The magnetic North Pole, on Boothia Peninsula when discovered in 1831 by Sir James Clark Ross, now is about 100 miles west, on Prince of Wales Island.

Canada's Westernmost Point

The most westerly point in Canada is Mount St. Elias in the Yukon Territory.

Alaska's Coastline Long

Alaska s coastline of 33,904 miles is longer than all other United States coasts combined.

Cross indicates where the Arctic and Atlantic Ocean waters meet.

A Microbe Helps Map The Oceans

OTTAWA, Jan. 7 (CP). — Where do the Arctic and Atlantic Oceans meet?

In Foxe Basin, for one place, the Canadian Fisheries Research Board said this week. Foxe Basin makes a large indentation in the western side of Baffin Island.

The Board's Arctic unit submitted a report to the annual meeting of the board on a five-year study of animal organisms found in water taken from Foxe Basin.

Some microscopic organisms which inhabit Arctic waters cannot live in sub-Arctic waters and vice-versa.

The Arctic unit said a very fine distinction now can be made between Arctic and Atlantic waters because a tiny ocean animal has been discovered which occurs in two varieties. The small variety was previously known to exist in Canadian Atlantic waters. The large variety, first identified in the Russian Arctic, now has been found to exist in the Canadian Arctic also.

In short, where the Arctic variety ceases to exist, the Arctic currents cease.

Mapping the occurrence of both varieties in Canadian waters is continuing, the board said in a statement.

Foxe Basin was found to be mainly Arctic, but Atlantic water enters it from the south through the eastern side of Foxe Channel and spreads to the south-central portion of the basin, sending a current up the eastern shore to the northwest corner.

ESKIMO 'DOG TAGS' MAY BE ABANDONED

OTTAWA (Canadian Press) —The special eskimo identification disc, introduced sixteen years ago to untangle a shifting pattern of vital statistics, may be abandoned in a few years. The need is vanishing.

Its purpose was to meet a problem raised by the fact that many eskimos had just one name, changed it from time to time, and also engaged in the practice of giving away children to couples who had none of their own or were better able to feed them.

Identification by outsiders might be further complicated by the fact that an Eskimo often used different names in different situations.

Then there was the influence of the spirit world. If the death of a relative was attributed to evil spirits, a child with the same name might have it changed. Or a youngster might be given the name of a mighty hunter on his death in the hope that the child will inherit his skill.

In recent years, however, the Toms, Dicks and Harrys have been creeping in as Christian names. Even if an Eskimo does change his name today, administrators can usually sort out quickly who he was before and who his family is.

The Eskimo disc was introduced shortly after family allowance payments were inaugurated in 1945. It helped in the administration of the baby bonus among the Eskimos. It resembled the "dog tag" issued to servicemen.

ESKIMOS CUT SCHOOL

Hunting and Fishing Seasons Find Classrooms Empty

PETERBOROUGH, Ont. (Canadian Press)—Postmaster, counselor, radio operator and village nurse, are just a few of the duties expected of a teacher in an isolated Eskimo village.

"Many teachers misunderstand the Eskimo way of life and this causes friction in the villages in some cases," Mrs. Wallace J. Harrison, a former teacher with the Alaskan Bureau of Indian Affairs and a leader in the Baha'i faith, told a Baha'i group in Peterborough.

"There are three periods during the year when the villagers will go to their camps and take the children along, leaving the teacher with an empty classroom," she said.

The villages are deserted for three to four weeks in the spring and during the fishing season in June and July. When mink camp operates in late October or early November, a teacher won't see her pupils until early January.

Airlift Marks Milestone in Polar Aviation

Location: top of the world. Population: 24. Natural resources: only water. Mean temperature: —65° F. Imports: everything from caterpillar tractor to eggs and soap chips. Exports: scientific data about the remotest region on earth!

This is floating Ice Station Bravo, home to 14 military personnel and ten civilians doing biological, magnetic, and other Arctic surveys.

Twice a year, pilots and crews from Sewart Air Force Base, Tennessee, fly their giant Lockheed ski C-130 Hercules aircraft to Ladd Air Force Base, Alaska. They load up with food, machinery—anything and everything the Bravo inhabitants might need in six months of life at the top of the world. The only commodity available locally is water—obtained by melting ice and processing it through a purification system.

Then the unique mission begins—the flight to supply the ice station that moves in an oval-shaped pattern around the North Pole. Despite the freezing Arctic temperatures and fog hindrance, the crews airlifted supplies to Bravo in record-breaking time last fall.

* * *

During the summer months, when the ice becomes too mushy for safe landings, occasional air-drops of badly needed supplies are made. But the majority of the cargo for the ice-bound scientific group is airlifted by Tactical Air Command's polar pilots of the 61st Troop Carrier Squadron.

The 61st Squadron is seasoned in cold-weather operations. They make ski landings the year round on the frigid Greenland ice cap in support of Distant Early Warning Line construction there, and also hold the honor of being the first outfit to land an aircraft the size of the 4-engine Hercules at the South Pole!

There's just one slight difference in the 61st's Arctic, Antarctic, and their Bravo operations. The ice station is a moving target! It drifts at the rate of two miles per day and is only ten miles in length and seven miles wide at its widest points!

Originally, the polar pilots flew missions from two ice stations—Bravo and Charlie. In January, 1960, Ice Station Charlie began breaking up and the 61st made a hurried flight to the Arctic for a dramatic evacuation of personnel and equipment. Between supply missions to Bravo, the Lockheed C-130's, built at nearly the opposite end of the globe in sunny Marietta, Georgia, are kept ready to fly a similar rescue mission, should the same fate be in store for Bravo.

Already an outer portion of the ice station has broken up and drifted away in small chunks. Officials can't give a firm life span for the station.

Last summer Bravo completed its trip around the North Pole and went aground off the coast of Alaska. A few months later, it broke loose and resumed its monotonous circle again.

* * *

The 24 scientists living on Bravo take events of this sort as a matter of course . . . and twice a year gratefully welcome the roar of C-130 engines overhead, with supplies and news from home.

The Georgia-built Hercules have unique capabilities that make them adaptable to these unusual operations. Powerful turbo-prop engines enable them to make take-offs and landings in almost unbelievably short distances while carrying several thousand pounds of cargo. They can take off like jets, fly like fighters, and back up like trucks!

Each of the planes is normally manned by a crew of six—a pilot, copilot, navigator, flight engineer, assistant flight engineer, and load-master. In the words of Captain John Phelps, navigator on one of the C-130's, "We are the only four-engine, ski-equipped squadron in the Air Force and all our squadron members have received special Arctic survival training on the Greenland ice cap."

The men of the 61st are as proud and boastful of their planes as they are of their missions which have marked a milestone in polar aviation!

Navy Transport Service Begins 10th Year of Arctic Operations

May 14

The Navy's Military Sea Transportation Service began its tenth year of Arctic operations last week with the sailing of the motor vessel Redbud from the Naval Supply Center at Bayonne, N. J.

The service's mission in the Arctic is to transport men, matériel and supplies to defense installations.

Crewmen of the Redbud will prepare Arctic sites and harbors, overhauling navigation aids and repairing submerged fuel lines damaged by ice. The fuel lines link land installations with points in the harbors where tankers are moored to buoys to discharge their cargoes.

The Redbud, 180 feet long and with a beam of 37 feet, will be joined by the Coast Guard cutter Westwind on June 7. They will work their way north.

The service said extremely heavy ice conditions might make it impossible to keep to the tentative supply schedule. The first supply ships are due at Goose Bay, Labrador, and Sondrestrom, Greenland, in mid-June, and at Thule, Greenland, in mid-July.

They will carry north 74,000 measurement tons of cargo and bring back 18,000 tons. The return cargoes will be mainly vehicles and equipment for salvage and repair.

The Arctic force will include eight ships manned by civilians, three icebreakers with helicopters and three salvage tugboats. Underwater demolition teams and midshipmen of the Naval Reserve Officers Training Corps will take part in the operation.

Since 1951 the transportation service has delivered more than 7,500,000 tons of cargo to Air Force bases in the Arctic and to installations of the Ballistic Missile Early Warning System, the Distant Early Warning Line and the Pinetree radar network in Labrador, Greenland and Baffin Island.

YUKON ROAD PLANNED

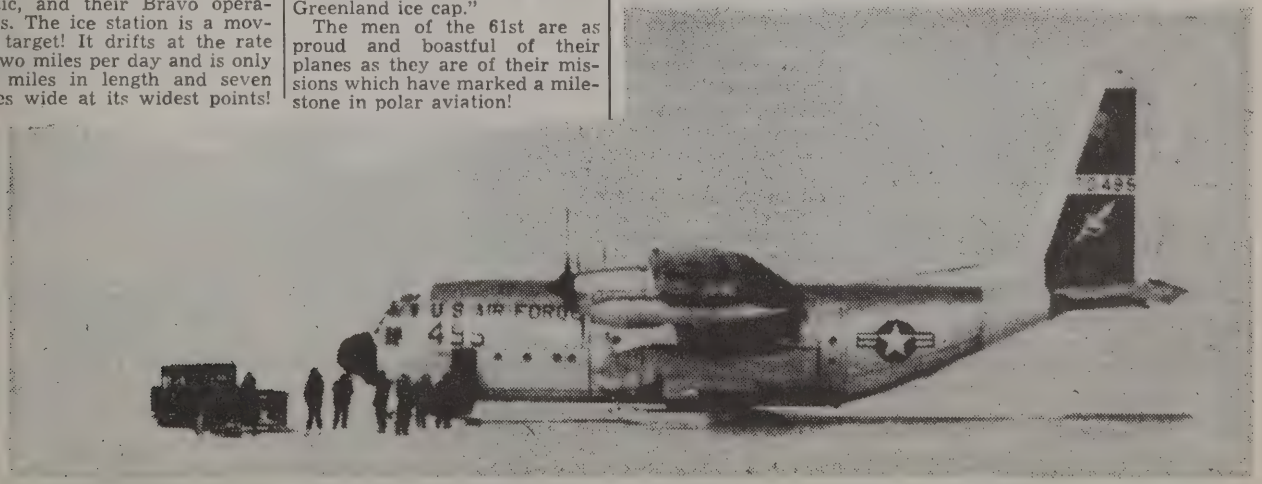
Will Run to New Mine Site in Canadian Territory

Northern Affairs Minister Walter Dinsdale announced recently that plans had been made for the construction of a development road in the southeastern part of the Yukon Territory, according to the Canadian Weekly Bulletin.

The road will start from Mile 65 of the Watson Lake-Ross River road now under construction and will run to the mine site being developed by Canada Tungsten Limited near the Flat River, just across the Northwest Territories boundary.

The first eighty miles of the road will serve the whole area and will be built by thte Federal Government. The remaining fifty miles will be constructed as a mine access road, with one-third of the cost to be carried by the company.

It is expected that the route will be in use in 1963. Total cost to the Federal Government is estimated at $1,947,000.



Supplies of all kinds are brought in on giant Lockheed ski C-130 Hercules aircraft

MOSCOW HOUSES VAST I. G. Y. DATA

Scientific Findings From All Over World Being Collated —Visitors Welcomed

By WALTER SULLIVAN
The New York Times.

MOSCOW —Probably the greatest concentration of scientific data in the world is squeezed into a few rooms in this city.

The archives are those of World Data Center B, harboring observations made by sixty-six nations during the International Geophysical Year of 1957-58 and its successor programs.

Yet less than half of the I. G. Y. results have been assembled. That, at least, is the off-hand estimate of those working at this center. In some cases transmission of the data has been slow, and in others the processing and correcting of results has perforce been prolonged.

The spools of microfilm, dossiers of graphs, volumes of fine-print numbers and shelves of published analyses represent observations made in a dozen fields of science. They were carried out on all the continents and oceans of the world, as well as in the upper atmosphere and in space beyond.

According to the staff, the Soviet rocket and satellite results on file here are those that have been published. The minute-by-minute records of radioed instrument readings seem to be in the hands of the institutes that did the experiments.

During the I. G. Y. American scientists tried, without success, to persuade the Russians to distribute all of their rocket and satellite data. The ultimate disposition of this material still appears to be unsettled.

One of the cardinal principles of the I. G. Y. was that its results be made readily available to the scientists of all lands. For this purpose three World Data Centers were created, each of which was to receive a complete set of results from all of the participants.

In addition to the center here, there is World Data Center A, in the United States, and World Data Center C, divided between Western Europe and the Far East. Except for this one, however, the centers are decentralized, with the records for each science held at a different institute.

Thus the fruits of the glacier studies carried out in the Alps, Himalayas, Ruwenzori (Africa's "Mountains of the Moon"), the ranges of Alaska, Greenland and the massive expanse of Antarctica are at three points:

World Data Center A for glaciology is at the American Geographical Society on upper Broadway in New York. World Data Center B is here. World Data Center C, in this science, is at the Scott Polar Research Institute of Cambridge University in England.

Whatever difficulties scientific visitors may have penetrating other institutions in the Soviet Union, they find a cordial and open reception at World Data Center B. The archives are actually split between two buildings.

Those for meteorology, glaciology, oceanography, seismology, gravity, nuclear radiation, geodesy, rockets and satellites are in a dozen rooms in a new housing development. The latter was recently completed near the massive building of Moscow State University and is inhabited by many members of the faculty.

SOVIET KEEN ON ARCTIC

Publications on Subject Take Lead for First Time

MONTREAL (Canadian Press)—The Soviet Union is publishing more information on the Arctic than any other country, the Arctic Institute of North America said recently.

The institute has just completed its tenth bibliography of books and articles dealing with the Arctic. For the first time it shows the Soviet Union ahead of every other country.

There were about 7,000 books or articles written in more than a score of languages about the Arctic in 1960. the institute said. The number of Russian works exceeded by nearly 600 the number of English-language writings.

In the ninth bibliography the figures were just the reverse.

Soviet Arctic Team Returns

LONDON, April 2 (AP)—A party of Russian Arctic explorers went home today after having lived for almost a year on a drifting ice floe that kept melting beneath them. The Moscow radio said the researchers had to be taken off the floe after it split in two one night, taking huts and stores away from the main camp. The broadcast said stores and equipment earlier had to be shifted eleven times as the floe kept shrinking.

Russian Arctic Explorer

Otto von Kotzebue, a Russian navigator, discovered New Year Island in the Arctic on Jan. 1, 1817. He brought home a large collection of previously unknown plants. He is also credited with having discovered the Romanzov, Rurik and Krusenstern Islands.

GEOPHYSICS YEAR LEFT DATA BY TON

Much Time Held Required for Analysis—Important Knowledge Already Won

WASHINGTON —Records of data on earth, in the sea, in air and in space, collected during the International Geophysical Year, an eighteen-month period that terminated Dec. 31, 1958, are running into tons and many years will be required for their study, according to the Smithsonian Institution. From stations in the Antarctic alone more than fifteen tons of records are on hand.

This vast accumulation results from the work of 20,000 to 30,000 scientists of sixty-six nations, with innumerable supporting workers.

Although a number of outstanding discoveries were made, many more doubtless will come from the gradual assimilation of International Geophysical Year data in the future.

This is the opinion of Capt. Elliott B. Roberts of the United States Coast and Geodetic Survey, a member of the United States National Committee for the I. G. Y., established by the National Academy of Sciences, in the most recent annual report of the Smithsonian Institution.

No comprehensive appraisal of the scientific results is yet possible, Captain Roberts says. The I. G. Y., he stresses, was primarily a period of observation and data gathering and it will require years for the world scientific community to analyze so much material—masses of data not yet even collected in any one place.

In spite of the far-from-finished status of the international investigations, Captain Roberts says, the I. G. Y. studies already have resulted in much new knowledge of great importance. For the first time, for example, he declares, there is some awareness of the nature of interplanetary space, of the true extent of the earth's atmosphere and of various earth-sun relationships.

According to Captain Roberts, "The store of knowledge already amassed is great. It includes the story of Antarctica's striking geological history shown through the evidence of petrified trees and coalbeds. We have learned that the oceans may become a primary food source, 'farmed' by man, and that their dark reaches may deliver up vast new riches for his benefit; that knowledge of solar processes may revolutionize our approach to energy problems; that space is far from a vacuum, but that despite its logistics problems and radiation hazards we will complete its conquest. The list could be well nigh endless. And we have yet far to go with the digestion of I. G. Y. data."

Fire Still Burns Under Arctic Island

By the Associated Press

Moscow

Tass has said that a tremendous 10-year-old underground coal fire on the Arctic island of Novaya Sibir (New Siberia) now covers 500 to 600 square miles. The island is uninhabited.

The Soviet news agency said a recent Soviet expedition to the area established that the blaze is consuming layers of soft brown coal which lie near the island's surface and expressed belief the fire was touched off by a hunter's bonfire. It probably will go on burning for years.

Soviet Air Line to Arctic

MOSCOW (AP). — Regular air service now links Moscow with the city of Norilsk in northern Siberia beyond the Arctic Circle, Tass has reported. The Soviet news agency said the 1,900-mile flight to the steelmaking city takes five and one-half hours. Norilsk, lying at the base of the Taimyr Peninsula, had a population of 2,000 in 1948 and has grown to 110,000 despite winter snowstorms almost daily and cold down to 40 below zero.

Russians Return From Floe

LONDON, April 19 (Reuters) —A scientific team from a Russian ice floe station has returned to Leningrad after drifting more than 1,500 miles for 376 days in the central Arctic region, the Soviet press agency Tass reported today.

Soviet Union's Borders

WASHINGTON — The Soviet Union touches twelve other nations but its sea coasts are longer than its land frontiers, the National Geographic Magazine says. The country's longest coast—16,000 miles—borders the Arctic Ocean.

Diamonds Sought in Siberia

The Soviet Institute of Arctic Geology has begun prospecting for diamond deposits in the Taiga area of south-central Siberia.

Viking Relics in Canada Sought

MONTREAL, April 15 (AP) —A Norwegian expedition will leave Montreal next month to search for traces of Viking settlements along Canada's eastern coast. The expedition's leader, Helge Ingstad, has said Vikings may have landed in Canada in the fourteenth century after having sailed from settlements in Iceland and Greenland.

STUART PAINE, 50, EXPLORER, IS DEAD

Member of Byrd Expedition to Antartic, 1933-35, Was Industrialist on Coast

March 15

Stuart Douglas Lansing Paine, San Francisco industrialist and former Antarctic explorer, died Monday in Peninsula Hospital, Burlingame, Calif., after a long illness. He was 50 years old and lived in San Mateo, Calif.

Mr. Paine was board chairman and former president of Thompson & Holmes, Ltd., of San Francisco, wholesalers of television and radio appliances. He was secretary-treasurer of the Paine Manufacturing Company, North Sacramento, Calif., manufacturers of hardwood cabinets, and vice president of the Davis Hardwood Company in San Francisco.

He was a member of the Antarctic expedition led by the late Rear Admiral Richard E. Byrd from 1933 to 1935. He was in charge of the expedition's dog teams and afterward wrote a book, "The Long Whip," on his experiences.

In 1934, Mr. Paine made a 320-mile round trip from Little America with other members of the expedition and three teams of huskies, who endured many hardships. Each team was composed of nine dogs, but on the return two dogs were dead and one had disappeared.. With thirteen days of blizzards the party had only eighteen days of sledging. One day the temperature dropped to 43 degrees below zero.

Mr. Paine was in a geological party that in 1934-35 made a sledging journey of 1,410 miles to within 180 miles of the South Pole. The trip took eighty-eight days by dog sled. He won a Congressional citation for his work on the expedition.

Born in Durham, N. H., Mr. Paine graduated from Phillips Academy, Andover, Mass., in 1929 and from Yale College in 1933. He joined the Navy as an ensign in 1939 and served as naval attaché at Lima, Peru, before our entry into World War II.

He was a member of the Commonwealth and Commercial Clubs in San Francisco.

Mr. Paine was a brother of Ralph D. Paine Jr. of New York, publisher of Fortune magazine and a vice president of Time, Inc.

Also surviving are his widow, Margaret; two daughters, Galen and Merlyn Paine; a son, Stuart Jr.; another brother, Philbrook Paine, his twin, and a sister, Mrs. Adrian O. Morse.

U. S. Coast Guard

Capt. George H. Bowerman

CAPT. BOWERMAN OF COAST GUARD

Retired Assistant Inspector General in Capitol Dies

Capt. George H. Bowerman, U. S. C. G., retired, died June 9 of a heart attack at Bergstrom Air Force Base Hospital near Austin, Tex. He was 56 years old and lived in Beltsville, Md.

Captain Bowerman served in the Missouri National Guard before entering the United States Coast Guard Academy, where he was commissioned in 1929. After serving out of New London, Conn., with a destroyer force investigating smuggling, he became a Coast Guard aviator and piloted planes out of Cape May, N. J.

Later he was a flier in Florida and commanded an air detachment in pursuit of smugglers and rum runners.

He commanded an aerial photographic mapping expedition to Alaska and the Aleutians in World War II and also was navigator on a troop transport in the invasion of Saipan and Tinian.

After the war Captain Bowerman commanded cutters, was director of the Reserve, Third Coast Guard District, here, commanded an icebreaker on resupply missions to bases and weather stations in the Arctic, and was, from 1954 until his retirement in 1958, at Coast Guard Headquarters in Washington. His final post was that of Assistant Inspector General.

Surviving are his widow, the former Hildred Coston, five daughters, two sons, a brother and five grandchildren.

BORIS VILKITSKI, ARCTIC EXPLORER

Former Admiral in Imperial Russian Navy Is Dead—Led 1912-15 Expedition

Boris A. Vilkitski, a former rear admiral in the Imperial Russian Navy and a noted Arctic explorer, died March 6 in Brussels, Belgium, where he lived in exile and retirement. The announcement of his death was made April 4 by the American Society for Russian Naval History. Admiral Vilkitski was 76 years old.

Between 1912 and 1915 he was chief of the Eastern Division of the Russian Hydrographic Arctic Ocean Expedition. The members of the expedition traveled on the icebreakers Taimyr and Vaigach from Vladivostok in Siberia to Archangel in European Russia, traversing vast expanses of the Arctic Ocean en route.

The expedition surveyed the Arctic coast of Siberia. They made charts of the coasts, did much oceanographical work and, in 1913, discovered an archipelago and two small islands off Cape Chelyuskin. He named the archipelago the Land of Emperor Nicholas II, then Czar of Russia, and the two islands Jokhov and Vilkitski. Named for him also was the Boris Vilkitski Strait, which joins the Kara and Laptev Seas of the Arctic Ocean and separates the archipelago and the Taimyr Peninsula on the Siberian mainland.

For his discovery of the archipelago he was appointed an aide de camp to the Czar. Admiral Vilkitski arrived in Archangel in 1915. In world War I he served in the Baltic Sea.

He graduated in 1903 from the St. Petersburg Naval Academy. In the Russo-Japanese War he was severely wounded in the unsuccessful defense of Port Arthur, Manchuria. In 1908, after finishing a course in hydrography at the St. Nicholas Naval War College, he began his Arctic explorations.

After taking part in the civil strife that swept Russia after World War I, he went to England and then to Belgium. In 1923 he headed an expedition to the Kara Sea for a British company. Later, he was employed for several years by the Belgium Government as a hydrographer in the Belgian Congo.

For his Arctic exploits he received gold medals from the Russian Hydrographic Society, the Swedish Scientific Geographic Society and the French Société de Geographie.

Surviving are his widow and a daughter.

Olav Bjaaland, Last Of South Pole Finders

OSLO, June 9 (AP).—The last surviving discoverer of the South Pole, Olav Bjaaland, eighty-eight, died last night at his home in Morgedal, eastern Norway.

Mr. Bjaaland was one of four experienced skiers who accompanied Norwegian explorer Roald Amundsen on his trip to the Antarctic in 1911. The five Norwegians reached the Pole in December, 1911. Amundsen disappeared on a plane flight over Arctic waters in June, 1928, while searching for the wrecked Italian airship Italia.

ESKIMO GARB ADAPTED

Light Synthetics Developed in Canada for Arctic Wear

CHICAGO (Science Service) —Lightweight synthetic materials fashioned on Eskimo concepts of clothing have been developed in Canada for Arctic wear.

Military activity in Arctic winters has been seriously hampered by the weight and bulk of protective clothing, Squadron Leader S. E. Alexander of the Royal Canadian Air Force's Institute of Aviation Medicine, Toronto, reported at the Aerospace Medical Association meeting here.

New lightweight mukluks, similar to sealskin boots worn by Eskimos, have been designed, offering better protection at one-third the weight, and a pure nylon fleece has been developed for duffle socks and insulating liners.

ARCTIC ICE STUDIED

McGill Scientist Takes on Task in Hudson Bay

MONTREAL (Canadian Press) —Peter Schwerdtfeger, an Australian-trained physicist studying for a doctorate degree at McGill University, is carrying out observations of ice formations on Hudson Bay.

Mr. Schwerdtfeger left Montreal Jan. 1 on the assignment for the university's ice research project, returned to the city March 10 "for a breather" and now is back at Churchill, Man.

His observations are being made on the heat release occasioned by ice formation, wind speed and the amount of heat being received from the sun.

North Pole Trek Fatal

Sweden's Solomon Andree and two companions were lost while attempting to reach the North Pole by balloon in 1897.

"Arlis One" Polar Base Abandoned

ARLIS One, the research station established September 10, 1960 on an Arctic ice flow has been abandoned, according to Jack R. Treutle of Keyser, W. Va. March 26 was the effective date of the event, he stated.

The temporary eight-man scientific research was originally set up on an ice floe in the Beaufort Sea, approximately 420 nautical miles northeast of Point Barrow, Alaska, under the leadership of Dr. Kenneth Bennington.

The men landed on the floating station from the "USS BURTON ISLAND (AGB-1)" and put together ten prefabricated buildings in two days with the assistance of the ship's crew. The base, established on old polar ice eight feet thick, was supplied by air drops.

The scientists conducted research in meteorology, oceanography, geophysics, marine biology, and ice physics. The Ice Island conducted under the auspices of the Office of Naval Research was directed by the Arctic Research Laboratory of the University of Alaska, at Barrow, Alaska.

ARLIS-One (Arctic Research Laboratory Ice Station One) site was selected by scientists flying out of Kodiak, Alaska in Navy PV-2 Reconnaissance planes.

Covers reported include documented envelopes from the Burton Island with notation "Alongside Ice Floe ARLIS-1 / 11 Sept. 1961". Autographed by Griffith C. Evans Jr. USNR, Commanding Officer, they were canceled by the ship's postal cancellation. Cmdr. Evans is now CO of "USS EDISTO (AG B-2)" participating in Operation DEEPFREEZE.

Philatelic mail submitted for handling at ARLIS One was returned postmarked 5 April 1961, Fairbanks, Alaska with two distinctive rubber stamp cachets.

The Norwegian stamps which have been issued over the years succeed in giving a fairly good picture of the unusual nature of the country. Norway with its many fiords and rugged coast has a longer coast line than any other country, and it is not surprising that the sea and shipping should have provided recurring designs for stamps. A special shipping series, illustrating the development of shipping and its importance to Norway, was issued in 1960. The country, with its 3,500,000 inhabitants is among the first shipping nations of the world.

The different series of stamps also give a veritable summary of the country's history. There are Vikings on the stamps commemorating Snorre (who wrote down the sagas), and there are special series in honor of the famous writers Björnstjerne Björnson and Henrik Ibsen, of musicians such as Edvard Grieg, of Roald Amundsen's polar flights, and of Fridtjof Nansen's work for refugees. In 1961 there will be an issue to commemorate the 50th anniversary of Roald Amundsen and his party reaching the South Pole — the first men ever to get there.

The North Cape is the northernmost point of the European mainland, and its well-known cliffs are to be found on Norwegian stamps issued in aid of the promotion of tourism. Each year tourists from all over the world visit northern Norway to see the midnight sun, and a great many of them make use of the opportunity to have their mail postmarked "Nordkapp."

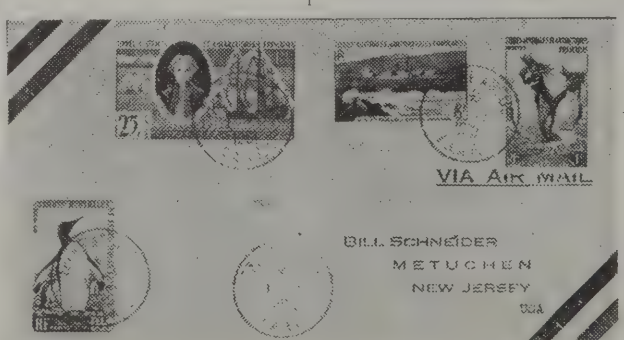
Special North Cape cancellation.

GREENLAND

Greenland announces that a 35-öre stamp, one and a half times as large as Greenland's normal stamp size, was recently issued. Its design portrays the Greenland Drum Dance, an indigenous ceremonial dance.

Asks Soviets to Aid Mail

LONG YEAR TOWN, Spitsbergen, Feb. 11 (AP).—The Norwegian Governor of this bleak Arctic archipelago has asked the Russians to help carry mail between here and Norway. Mail flights were suspended two years ago.



COLLECTORS OF POLAR MATERIAL will not be alone in admiring this January 1 cover with a French issue for that nation's holdings in the Antarctic area. The stamps show a general view of a camp at the Islands of St. Paul and New Amsterdam, two forms of bird life there, and the portrait and three ships of an early explorer, Yves-Joseph de Kerguellen-Tremarec. The cover was submitted by Mr. Schneider from his collection.

Polar Ice Breaker Had One-Shot Cachet

The "USS GLACIER" on duty recently in the Amundsen Sea Coast area of Antarctica set up a post office and serviced mail on a one-day-only basis last March 4, according to Jack R. Treutle of Keyser, W. Va.

The occasion was to commemorate penetration and exploration of the Antarctic area, and was of important significance historically to the philatelic documentation of the cruise, Mr. Treutle explained. It was similar to the "Eights Coast" cancellation of last year in circumstances and importance, he stated.

Comdr. Phillip Porter estimated that about 2000 covers were serviced on a strictly one-per-collector basis.

The Glacier was commissioned in May 1955, named after Glacier Bay, Alaska. She is 310ft. long, 75ft. beam, with displacement of 8600 tons and a complement of 41 officers and scientists and 320 crew members.

Of unusual interest is a built-in heeling system for breaking free of ice. This involves shifting 140,000 gallons of water rapidly from side to side to create a 10-degree roll.

Collectors interested in polar philately and its ramifications may obtain data on the American Society of Polar Philatelists by contacting John C. Krolik, 166 W. 10th St., Bayonne, N. J.

Greenland Postmark, Parcel Post Details

Lee Forrest of Philatelics Scandinavia, 3405 W. 50th St., Cleveland 2, Ohio has announced that he has obtained from the publisher in Copenhagen, Denmark all remaining copies of the 1959 first edition of the Greenland Postmark Catalog written by R. King-Farlow and Eric Wowern.

This is a Danish language booklet of 44 pages half letterhead size, with a detailed and well researched listing of post offices and postmarks used in Greenland. These remaining copies are now offered at 60c each, complete with English translation and English language supplement of October 1960, by Mr. Forrest.

Accompanying the catalog is a three-page "short description of the parcel post stamps used by Greenland 1905 through 1937", during the period preceding the September 17, 1938 law requiring franking on all mail sent from Greenland.

Books Supplied to North

DAWSON CREEK, B. C. (Canadian Press)—A bookmobile carrying more than 2,900 books will make its annual trip along the Alaska Highway shortly. The Dawson Creek Library Association sends the bookmobile to supply schools and adult libraries along the highway.

'Assault on the Unknown'

ASSAULT ON THE UNKNOWN. By Walter Sullivan. 460 pages. Illustrated. McGraw-Hill. $7.95.

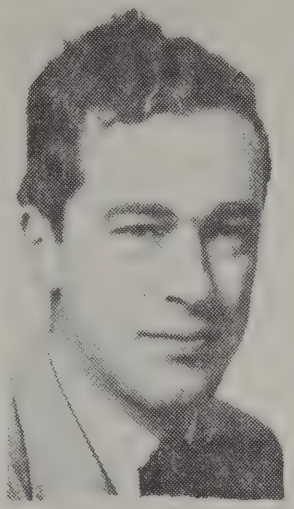
REVIEWED BY

Maurice Dolbier

IN MANY ways, the International Geophysical Year hopefully prefigured a world come to its senses, in which people of all nations will work in concert to learn more about the planet they inhabit rather than waste their time and substance in devising means to knock each other off it.

For eighteen months, from July 1, 1957, through Dec. 31, 1958, some 60,000 scientists from sixty-six nations took part in what one of the IGY's organizers described as "the single most significant peaceful activity of mankind since the Renaissance and the Copernican Revolution."

There were Americans and Russians on floating islands of ice near the North Pole; there were Polish scientists



Walter Sullivan

in North Viet Nam; Englishmen in the Bolivian Andes; a league of nations represented in Antarctica — the United States, the Soviet Union, Great Britain, Australia, New Zealand, Argentina, Belgium, Chile, France, Japan, Norway. There were scientists on mountaintops and in caverns, on coral islands and research ships.

They sent cylindrical drills into the ice of Antarctica, bringing forth frozen cylinders whose bottom layers dated as far back as the sixth century; they sent trawls into the deepest trenches of the western Pacific: into the skies they sent rockets, balloons, interesting combinations called rockoons, and a number of satellites and space probers (beginning, dramatically, with Sputnik I). Not a part of the IGY program was the Argus project of the United States Department of Defense, in which three hydrogen bombs were exploded some 300 miles above the earth, drawing, three times, "a thin curtain of trapped electrons around almost the entire civilized world." It was a project described by scientist James A. Van Allen as "one of the greatest experiments in pure science ever conducted"; the secrecy with which it was shrouded was described by him as "a masterpiece of administrative stupidity."

Mr. Sullivan's book is the first detailed history of this scientific *annus mirabilis*, exciting in its events, its discoveries and its portents. With skill and clarity, he outlines the background of the IGY itself and of the areas of science in which its thousands of workers sought answers to old questions and, in many cases, found new questions to answer. It is a story that contains many individual incidents of humor and heroism; it is an inspiring record of a collective enterprise in the quest of scientific truths about the earth, its seas, its poles, its interior, its weather, and the space through which it travels—an enterprise that has brought us "a little closer to a cosmic view of our planet; a water-covered sphere, crusted here and there with continents upon which there is the fragile green hue of life."

Probing a Great White World

ANTARCTICA: The Story of a Continent. By Frank Debenham. Illustrated. 264 pp. New York: The Macmillan Company. $5.50.

By TREVOR LLOYD

McMURDO SOUND is today a very busy place, even though it is half way between the Antarctic Circle and the South Pole. Giant air freighters reach it regularly from New Zealand during the brief summer season bringing in hundreds of men along with supplies to be distributed to lesser settlements, one of them 800 miles farther on at the Pole itself.

When the site was chosen during planning for the International Geophysical Year, a map of the area was already on hand and so was Frank Debenham, the pioneer surveyor who made it more than forty years before. A young Australian member of the Scott Antarctic Expedition, in later life he became Professor of Geography at Cambridge University and director of the Scott Polar Research Institute. Now half a century after his first expedition he has written a vivid and yet richly factual account of the great southern continent; of its wind-sculptured icy mantle, the rich life of its surrounding waters and of the succession of expeditions large and small (a party of two young men once wintered alone there) who have sought out its scientific secrets.

Rightly named "the home of the blizzard," Antarctica is remembered by Frank Debenham not only for the shrieking and thundering winds, which average five times the speed of those of North America, but also for the three or four blessed days of absolute calm each summer, when the sky is deep blue, and snow crystals flash in the sunlight like diamonds.

IN a well-balanced account of the discovery and exploration of Antarctica, the author pays particular tribute to two early navigators, Capt. James Cook of England and Capt. Thaddeus Bellingshausen of Russia. Within forty years of one another, they sailed on remarkably long voyages in the southern seas searching for a continent that eluded them to the end. Their reports of storms and ice and empty seas discouraged any successors from England for a generation, and from Russia for well over a century.

The historical record is traced through the ages of sail, steam and oil, and emphasizes how much of the spectacular unveiling of Antarctica has been possible because of the airplane. Although his own polar traveling was done on foot, when British explorers hauled their own sledges, the author is all in favor of the best modern techniques and equipment—the tractor, airplane, crevasse detector and radio. Yet he remains a believer in the value of the sledge dog for detailed mapping and scientific probing.

Like the rest of us he is continually amazed at the vast tonnages and high costs that are taken for granted in Antarctic exploration. The occupation of the Byrd I. G. Y. station in 1958 was done over a trail 650 miles long, using seven 40-ton tractors hauling twelve 20-ton sledges. And 80 per cent of the load was fuel. He remains sure that much excellent scientific work can still be done with less logistics. Even though the transpolar journey by Sir Vivian Fuchs in 1958 cost five times that of the whole Scott expedition of forty years earlier, it was still only one-half the cost of one of the three Globemasters lost in 1956 during the preparatory stage of the I. G. Y.

"ANTARCTICA" is rich in the colorful miscellany of polar natural history. They range from minute diatoms to mighty albatross and include the folkways of penguins, "the little old gentlemen in evening dress" of an early French explorer, highly personal recollections of the ferocity of rapacious skua gulls, a summary of the rise of commercial whaling and hunting of the giant Blue Whale, which gulps down a ton of shrimps every day, and a vivid life story of the bull sea elephant, a seal whose domestic battles are on a heroic scale.

Readers with detective inclinations can worry about a species of large fish invariably found with its head missing, and those who believe Antarctic exploration to be all high tragedy should read Herbert Ponting, the Scott Expedition photographer, who closed the classic debate as to the best way to wear a fur garment by a poem opening with "One side likes the skinside inside, and the furside on the outside."

The only fault—and that a mild one—in a book that is packed with information and still makes enthralling reading —is that its record ceases with 1958. It can therefore take no account, when discussing international bickerings over territorial ownership, of the treaty signed in 1959. Frank Debenham would be the first to acclaim Antarctica as the only really large part of the world where scientists of all nations can work today in unison.

ANTARCTIC PILOT SIGHTS VOLCANO

Scientists to Check Flier's Report of Steam Issuing Out of Mount Terror

The New York Times.

CHRISTCHURCH, New Zealand, Jan. 2—It appears that Antarctica has two active volcanoes, not just one, according to a short-wave radio report received here today.

Plumes of steam were said to be seen issuing from a crater atop 10,148-foot Mount Terror, thirty air miles from the United States main Antarctic base at McMurdo Sound.

Previously, the only active volcano known on the Antarctic Continent was Mount Erebus, also on Ross Island, about eighteen miles from Mount Terror.

The two mountains were discovered in 1841 by a British Antarctic expedition led by Capt. James Clark Ross, after whom the island and the sea to the north were named. Both peaks were named for the two ships on the expedition.

Positive confirmation that volcanic activity is taking place within Mount Terror could not be made, United States sources at McMurdo Sound said, until scientists could take a closer look.

Lieut. (j.g.) James Long, a helicopter pilot from the United States Coast Guard's icebreaker Eastwind, told the staff of Navy Task Force 43 here that he had first noted signs of volcanic activity over Mount Terror on a flight early one morning just before Christmas. At the time, his ship was breaking ice in McMurdo Sound.

He said it was doubtful that the white puffs he had observed some thirty feet above the crater were clouds, because the sky was exceptionally clear elsewhere. Similar white whisps were visible, as usual, over Mount Erebus, but to a lesser extent, he said.

Should the apparent awakening of Mount Terror from a slumber that spans the memory of man be confirmed, it will come as no surprise to at least one scientist now on the ice.

John Mulligan of the United States Bureau of Mines said through representatives of the United States Antarctic research program at McMurdo that he thought he had seen "slight indications" of volcanic activity when he flew over the crater last year.

Mammal Hearts Compared

The heart of a gray whale weighs 250 pounds, the human heart only eight ounces.

Antarctic Speeding New Radio Network Of Communications

By JOHN A. OSMUNDSEN

The New York Times.

CHRISTCHURCH, N. Z., Jan. 3—A new communications network is going up between here and the Antarctic Continent, 2,100 miles to the south.

Powerful transmitters and sensitive antennas will give almost twice the reliability and much greater flexibility than present facilities afford, according to Comdr. Richard E. Cross, the United States Navy communications officer for Operation Deep Freeze.

The $1,800,000 project is finally hitting stride, he said. It will probably meet this year's commitment despite severe setbacks earlier in the season caused by bad weather and radio blackouts. These disturbances stalled the movement of men and materials to the ice.

New facilities are being put in here, at McMurdo Sound and at the Amundsen-Scott South Pole Station this year. Next year, equipment will be installed at Byrd Station and Hallett Station, which the United States operates jointly with New Zealand.

When the work is completed, the net work will provide surer contact between the support base here and the stations on the continent and among those installations. It will also improve communications with planes that fly down from here and on missions throughout a large part of Antarctica, and with scientific parties in the field.

The project has been called one of the most important American missions in the Antarctic this year by Rear Admiral David M. Tyree, commander of the Navy's Task Force Forty-three.

The equipment that is being replaced was installed for use during the International Geophysical Year, 1957-59, he explained in an interview here today. It is both out of date and getting tired, he said. Two serious equipment failures in the last two months supported that view.

Most of the old apparatus was the best left over from World War II and was the type used on shipboard, not in shore stations according to Commander Cross.

As a result, he said, the existing facilities have a reliability of only 40 to 60 per cent. He estimated that information does not get passed along about 50 per cent of the time.

The new equipment, with sensitive, mainly directional antennas and transmitters about three times more powerful than those now in use, should provide 90 to 95 per cent reliability, he said.

Studies showed that a high degree of reliability would be needed, he explained, for the establishment of permanent bases on the continent, an objective of United States Antarctic activities that became certain for the first time this season.

11 Make First U.S. Trip To South Pole Overland

AUCKLAND, New Zealand, Jan. 11 (AP) — The first Americans to travel an overland route arrived at the South Pole today.

Seven United States Navy men, two scientists and two Army officers started their trek Dec. 8. They drove the giant tractors over 800 miles of previously unexplored Antarctic territory from Marie Byrd Land Station to the pole.

At the polar station the tractors will be used to maintain a new landing strip.

Under the command of Maj. Antero Havola, U.S. Army, a veteran of Greenland travel, the party consisted of Walter L. Davis, the tractor maintenance boss; Willard E. Cunningham, James R. Douglas, and Marvin F. Medlin, drivers; Meredith Radford, cook; Edward Martens and Shirley F. Mahan, radiomen; Forrest L. Dowling and Henry Rosenthal, civilian scientists; and Chief Warrant Officer George W. Fowler, U.S. Army, the navigator and trail-blazer.

3 Take Swim In Antarctic

CHISTCHURCH, N. Z., Jan. 7 (UPI) An American, a Canadian, and three New Zealanders have gone swimming in the Antarctic. Reports reaching here today said they had a swim in one of the ice-free valleys of the Koettlitz Glacier area about fifty miles from the American base at Ross Island. The swim took place on Christmas Day.

Historic Watch Stolen

LONDON (AP) — The pocket watch carried by explorer Capt. Robert Scott on his last antarctic expedition in 1912 has disappeared after being exhibited in Australia.

The group that made the trip to the pole

U. S. GROUND TEAM IS AT SOUTH POLE

Party Is Nation's First to Reach Goal by Land—2d Group Also on the Way

By WALTER SULLIVAN

Jan. 14

During the last week one American group of tracked vehicles reached the South Pole and two others snaked across the surrounding blanket of ice, exploring the land beneath it.

One of these exploring groups also hopes to reach the Pole after hunting a range of mountains that has been missing half a century. The other is headed for a tent camp airlifted to Thurston Peninsula on the coast.

The party that reached the Pole was the first group of Americans to do so on the surface. Led by Maj. Antero Havola of the Army, its chief task was to deliver two D-8 tractors, weighing some thirty-eight tons apiece, to the United States South Pole Station, as well as a smaller vehicle known as a Weasel.

The first men to set foot at the Pole were five Norwegians, led by Roald Amundsen, who reached there in 1911 behind dog teams. To the east, as they neared the Pole, they reported seeing an impressive range of mountains. The peaks still show on many maps, though many now believe non are there.

It is thought that Amundsen may have seen a mirage of the extremely distant Horlick Mountains. The route now being followed to the Pole by a scientific party under Dr. Albert P. Crary runs right over the area where Amundsen reported his peaks.

Five Englishmen under Captain Robert F. Scott reached the Pole a month after Amundsen, but all died on the return march. No surface travelers set foot there again until the New Zealand and British parties of the Commonwealth Trans-Antarctic Expedition arrived in January, 1958. A Soviet party drove to the Pole from the Indian Ocean a year ago.

With Dr. Crary's eight-man party is a Soviet exchange scientist, Sveneld A. Evtseyev, a glaciologist.

Both the group of eleven men under Maj. Havola and the party under Dr. Charles R. Bentley, which is headed for the sea, set forth from Byrd Station. Dr. Bentley has been zigzagging in an effort to chart the terrain below the ice sheet of Marie Byrd Land, much of which is more than two miles thick.

Their radio reports indicate that the buried land is extremely rugged. They will leave their vehicles at Thurston Peninsula to be started up next spring for a zigzag trek to the Filchner Ice Shelf on the Atlantic side of the continent. The objective is to determine the basic structure of Antarctica in this key region.

There are indications that Palmer Peninsula forms a narrow, mountainous ridge that extends from below South America to the massive mountain system encircling the South Pole. If so, it is by far the longest peninsular structure in the world, reaching the equivalent of the distance from Texas to New York.

However, it is also possible that the peninsula may be separated from the main body of the buried continent by a deep, narrow trough. Several segments of trough structure have already been detected nearby through explosion-sounding of the ice.

The New York Times Jan. 15, 1961

POLAR TREKS: The first Americans to travel overland to the South Pole arrived there last Wednesday under Maj. Antero Havola via the route from Byrd Station shown Above. Another American tractor party, under Dr. Albert P. Crary, still has several hundred miles to cover en route to the pole. A third party, under Dr. Charles R. Bantley, will be flown out when it reaches Thurston Peninsula. The scientific parties in some cases disgressed from the straight-line routes shown above to broaden their coverage of the terrain below the ice.

Halted by Polar Blizzards

The New York Times.

McMURDO SOUND, Antarctica, Jan. 11—The tractor party under Major Havola, on its 800-mile journey to the Pole, was often stopped for days at a time by blizzards and blowing snow.

With the return of fair weather, the bearded men would emerge from tractor cabins and sled-mounted bunk spaces, dig out their equipment and start off again.

The D-8 tractors, lumbering through the snows at thirty miles a day, were driven eastward from Byrd and past the eastern end of the Horlick Mountains. Then they swung south toward the Pole on Long. 78 degrees W.

The navigator and trail-blazer, Chief Warrant Officer George W. Fowler, United States Army, rode in the tractor train's lead vehicle.

Ranging one mile ahead of the tractors in his tracked weasel, Mr. Fowler was responsible for finding and making a safe and accurate route. Three times a day navigation sights were taken and every 1,000 feet the trail was marked with 12-foot flagged bamboo poles.

The two tractors towing three twenty-ton sleds and one ten-ton sled and two sled-mounted wannigan huts followed in the tracks of the lead weasel.

Having turned south and climbed from 6,500 feet to the 9,000-foot South Polar Plateau, Major Havola's train was confronted with immediate danger. Crevasses were found in every direction that the reconnaissance weasel searched—black, often snow-bridged slashes in the white surface that could engulf machinery and human beings.

Major Havola radioed back to Byrd Station requesting an aerial reconnaissance flight.

"What is the extent of the crevass field?" he asked. "Are there any other fields possible along the 78-degree west route to the Pole?"

A twin-engined R4-D Skytrain of the Navy's Air Development Squadron Six flew out to the train. Criss-crossing back and forth above the stalled train, the aviators and crew members studied the surface. A feasible route was selected and radioed to the men waiting on the snow. In one final, low pass the aircraft dropped a copy of the proposed route and a sack of mail to the appreciative train team.

No one complained of idle time throughout the trip. Geographical fixes were taken in the Horlick Mountains to provide control points for precise mapping programs of the area in the future.

During the thirty-five-day trip the train's two scientists, Forrest L. Dowling from the University of Wisconsin and Henry Rosenthal of the Arctic Institute of North America, conducted weather observations and related scientific studies under grants from the National Science Foundation.

Weather reports were radioed daily from the tractor train to United States Antarctic stations. The reports are used for operational forecasts and relayed from McMurdo to the International Antarctic Analysis Center for weather in Melbourne, Australia.

ANTARCTIC'S MAPS NEARLY COMPLETE

Navy Fliers Photographing One of Last Unexplored Regions of the Earth

By JOHN A. OSMUNDSEN
The New York Times.

CHRISTCHURCH, New Zealand, Jan. 4—A chapter in the history of man's exploration of the earth will be brought to a close this year by a small group of United States Navy fliers in the Antarctic.

They are engaged in an aerial mapping program that has been described as "fantastic" by experts in the field. Nearly 500,000 square miles of snow and ice and barren rock have already been photographed, more than 100,000 miles of it this season.

Before the job is finished, no major feature on earth will remain undiscovered, according to authorities here and in the Antarctic.

A few peaks may yet be seen for the first time in some parts of South America or in Antarctica, but probably nothing so large as a mountain range or major valley will be found, they predict.

One authority confessed having made a special effort to reach Antarctica this year, partly because he "wanted to be around for the end of it."

Another, who has probably seen more Antarctic photographs than any man alive, just left here for his first visit to the great white waste.

He is William R. MacDonald, photogrammetrist for the United States Geological Survey, which is conducting the Antarctic mapping operation with a grant of $268,500 this year from the National Science Foundation and the assistance of the Navy's Air Development Squadron Six.

Mr. MacDonald has inspected every aerial photograph of the Antarctic that has been taken by the United States since Project Highjump in 1946-47. He shows no signs of tiring of the job, rather he marvels still at what the photographs reveal, such as shadow detail on the snow from 25,000 feet.

The purpose of the program is to obtain accurate maps of the Antarctic, which are essential to practically all activities on the continent.

For example, one such map, made of the Horlick Mountains region with the aid of photographs taken last year, is being used on an overland traverse from Byrd Station to the Pole this year.

Accurate maps are also essential to charting coastlines to assist in the making of ocean soundings, geological surveys and studies of the distribution of Antarctica's ice and snow, flora and fauna.

"There is no need just to collect specimens of things if you don't know where they came from," explained Dr. Brian B. Roberts of the Scott Polar Research Institute and the British Foreign Office.

Dr. Roberts, who visited United States installations in Antarctica this season as an official observer from Britain, has been engaged for some time in the preparation of maps from aerial photography and ground surveys of the Palmer Peninsula area.

He said he was highly impressed with the job that the Navy's VX-6 Squadron has done of photographing the Antarctic this year.

Under Capt. William H. Munson, commanding officer, Comdr. Manson Krebs, operations officer, and Comdr. Lloyd Newcomer, executive officer, three nine-man crews fly P2-V Neptunes — converted antisubmarine patrol planes.

Photographs are taken three at a time to cove an arc from horizon to horizon about every twenty or thiry seconds, depending upon the altitude, which ranges usually between 20,000 and 25,000 feet.

Maps made in Washington from those photographs and control points that are obtained from Geological Survey crews on the ground are accurate to within a couple of hundred yards, Mr. MacDonald said. By comparison, some existing maps have mislocated features by as much as 100 miles and put mountains where none exist.

A Sail Around Antarctica

Capt. James Cook of England, from 1773 to 1775, sailed around Antarctica without seeing land.

Quell Ship Fire In Antarctica

BOSTON, Jan. 10 (AP).—Coast Guardsmen aboard the icebreaker Eastwind in Antarctica successfully fought a fire that threatened to spread to dynamite stores used to blow up ice jams, a radio message from the ship said today.

Valuable scientific equipment was lost in the blaze that raged for two hours, but the ship itself was unharmed and will continue on duty, the skipper messaged Coast Guard headquarters here. Capt. Joseph W. Naab of Freeport, Me., is captain of the Boston-based icebreaker which left here Oct. 24.

Navy men set out 'grasshopper' which broadcasts data on weather from remote location on Antarctic wastes.

WEATHER STUDIES PRESSED AT POLE

Antarctic Center Hopes to Determine Pattern's for Southern Hemisphere

By JOHN A. OSMUNDSEN
The New York Times.

MELBOURNE, Australia, Jan. 6—A weather research program that will soon become the largest in the Southern Hemisphere has just been started here.

It is being conducted by the International Antarctic Analysis Center, a clearing house for nearly all of the weather data that are collected between the Thirtieth Parallel and the South Pole.

The center's goal is an ambitious one: to determine the relationships between weather circulation in Antarctica and that in the rest of the Southern Hemisphere.

Such knowledge would have important applications for weather analysis and forecasting here and possibly throughout the world.

Until now the center's efforts have been devoted exclusively to the collection and analysis of weather information that is received from 200 stations in the Antarctic, on scattered oceanic islands, in parts of South Africa, South America, Australia and New Zealand and from roving whalers.

Daily weather charts are drawn from the data by five meteorologists and twelve assisting personnel. Microfilms of the charts and of the raw data are made and sent in monthly batches to sixteen subscribers throughout the world.

That work will continue but now that two years' weather data are available, the center can begin the research it was chartered to conduct by the Special Committee for Antarctic Research of the International Council of the Scientific Union.

Three research projects have just begun and a fourth will be started soon.

Two of the projects are aimed at establishing rules by which weather-circulation patterns in regions where meteorological data are regularly collected can be used to forecast weather in areas far remote from permanent weather stations.

In one such project Lieut. Comdr. John Timbs of the Royal Australian Navy is trying to establish correlations between atmospheric pressure surges in the Antarctic and meteorological events, such as storms, in the north of the continent. If he succeeds, it may be possible to release forecasts in some regions of the southern oceans that now must take their weather pretty much as it comes.

A similar project conducted ten years ago by Capt. Graham Britton of the Royal Navy succeeded in permitting accurate seven-to-ten-day forecasts for parts of the South Atlantic from observations taken in the Falkland Islands. Commander Timbs hopes to discover whether the rules of weather circulation that Captain Britton found for one particular area will help in the forecasting of cyclonic action throughout much larger regions.

A related project will be started soon by Dr. José Hoffmann, the Argentine representative to the center. He plans to trace major atmosphere pressure troughs across a wide expanse of the South Pacific where there are no weather stations.

ICE IN ANTARCTICA YIELDS TO MELTER

Propeller Apparatus Creates Fast Current Underneath —Successes Described

By JOHN A. OSMUNDSEN

Tests have recently been completed in the Antarctic on a system for keeping channels, ports and water intakes open the year around in ice-bound regions of the world.

Specially shaped propellers driven by small submersible electric motors were hung through holes blasted in the ice of McMurdo Sound. The propellers created miniature Gulf Streams of fast-moving water that wore away the ice from below.

In that way, a ten-horsepower device took 183 hours to open an area 30 feet by 85 feet in ice 8 feet thick, according to George E. Gross. He is president of Future Products Research, Inc., of Skokie, Ill., the company responsible for developing and testing the system.

An additional swath of ice 200 feet long was undercut by the artificial current to a thickness of eighteen inches in 183 hours and soon afterward fell through, Mr. Gross said in a telephone interview Feb. 7

Mr. Gross and representatives of two other companies—the Besley-Welles Compan of Beloit, Wis., which designed and manufactured the equipment, and the Franklin Electric Company of Bluffton, Ind., which supplied the motors — were guests in the Antarctic of the Navy's Operation Deep Freeze 61.

The Navy is interested in the outcome of the tests, which are just now being analyzed, as a possible means to keep expanses of water ice-free for a water intake to supply an atomic power plant being constructed at McMurdo. The Navy is interested in a supply of water for fire control, for trash disposal and possibly for a dock and turn-around basin for ships

Data collected during the tests should also indicate the feasibility of using several of the devices hooked up in series to clear a twenty-mile channel through the Ross Sea ice for the passage of cargo vessels into the Naval Air Facility at McMurdo Sound.

Although few of the units are being used in the United States, Mr. Gross said, none has been tested heretofore in salt water nor under the extreme cold conditions of the Antarctic.

"We feel that if we can melt ice there, we can do it anywhere in the world," he said.

Navy Tests an Ice-Melting Technique in Antarctic

Technicians at the Naval Air Facility at McMurdo Sound operate ice-melting device consisting of a propeller driven by submersible 10-horsepower motor. The propeller creates fast-moving currents beneath the ice, causing the ice to be worn away from below.

'Warm' Water Found Under Ice Of Two Lakes in the Antarctic

The New York Times.

WASHINGTON, Feb. 13—Surprisingly warm water, with temperatures well above freezing, has been discovered in two ice-covered lakes near McMurdo Sound in the Antarctic, the National Science Foundation said today.

Foundation scientists were baffled by the discovery.

It had been presumed that temperatures in the depth of the Antarctic lakes would range around the freezing point of 32 degrees Fahrenheit. Instead, a layer of water with temperatures of 46.4 degrees Fahrenheit was found beneath the ice.

The water was discovered by three University of Kansas researchers, Rufus H. Tompson, Kenneth B. Armitage and Hugh B. House. They are making biological investigations of freshwater lakes in the Antarctic under a grant from the foundation.

The foundation termed the discovery "significant" in view of these facts:

¶The average annual temperature in the Antarctic is well below freezing.

¶There is very little if any melting of the surface ice.

¶The ice cover of the two lakes, ten to fourteen feet thick, is in all probability permanent.

Under these conditions, the announcement said, "one would not normally expect to find lake water above 39 degrees Fahrenheit."

The water was discovered at Lake Bonney, 100 feet deep, at the head of the Taylor Glacier Dry Valley, about sixty-five miles from McMurdo, and Lake Vanda, about 190 feet deep, near the head of Wright Dry Valley, about eighty miles from McMurdo.

In Lake Bonney, the water became increasingly warmer with depth, ranging from 32.5 degrees immediately under the ice to 45.9 degrees at fifty feet. From there on down, the water became increasingly colder. At the bottom the temperature was 27.6 degrees.

At a depth of thirty-five feet the water was quite fresh. At the bottom it was twice as salty as sea water. The saltiness inhibits freezing.

In Lake Vanda, the water temperature was 46.4 degrees between fifty and seventy feet down and stayed as high as 45.5 degrees as far down as the researchers were able to measure, about 100 feet.

The foundation said that one possible explanation for the warm water was a higher than normal flow of heat from the ground. The temperature of the earth, which increases with depth, varies with locality and the heat conductivity of the geological formation.

RUSSIAN AT M'MURDO

Scientist Will Join American Antarctic Researchers

LONDON, Jan. 31 (Reuters) — Leonid Kuperov, a Soviet polar explorer, has arrived at the United States base at McMurdo Sound in the Antarctic, the Russian press agency Tass said today. He traveled abroad an American ship from Christchurch, N. Z.

Mr. Kuperov will go to Byrd Station, in land, to conduct research in terrestrial magnetism and currents and polar lights, Tass said. Sweneld Yevteyev, a Russian glaciologist, already is conducting research with Americans on the continent, it said.

Whale Oil Protective

The oil in a sperm whale's head is believed to serve as a cushion to protect vital organs from the excessive pressure during its deep ocean dives, according to the AP.

Main Dangers in the Antarctic Now Psychological

Scientists Must Take Same Observations Day After Day for Months

By Wadsworth Likely

New York Herald Tribune

The days of danger in the Antarctic are ended.

No longer must a scientist seeking samples of rock suffer long weeks of intense cold, man-haul his supplies over miles of ice, wonder whether he has enough food to sustain him until he gets back to civilization.

Every scientist who goes to the Antarctic now acknowledges the debt he owes to the men who came before him. Many risked death, some suffered it. But today's Antarctic researcher seldom risks his life although he knows danger can be waiting for him just outside.

Instead of the danger of death, the American scientist wintering over at the South Pole or at the American Antarctic stations faces the boredom of making the same scientific observations over and over every day, the psychological perils of months-long isolation in the winter dark and cold.

American scientists will continue these scientific routines, these psychological perils for years to come because the United States is in the Antarctic to stay. So are eleven other nations.

When Jack Tuck, the South Pole station's first military leader in 1955, raised the American flag to the top of the iron pipe which had been erected at the site of the Pole, he thought it would come down in two years—when the International Geophysical Year was ended. That iron pipe is still there, a fifty-star flag whipping in the winds which constantly blow over the polar ice cap.

Meteorologists at the Pole, on twenty-four-hour-a-day watch through the night of the winter and the day of the summer, launch balloons into the upper atmosphere, take reading of heat radiation, measure winds. After the sun goes down on March 21, an upper atmosphere physicist will sit in a plastic dome protruding above the snow drifts and watch the spectacle of the aurora australis. A seismologist daily crawls through a 1,000-foot tunnel in the snow to see what jigs and jags the pen has made on the instruments which records earth tremors. Glaciologists are now going down ninety-feet into a snow mine—down that far is snow which fell in 1776—to find out about the strength of snow under compaction.

At the other stations occupied by the Americans similar scientific programs are going on. Many of the 120 scientists and technicians in the 1960-'61 program were on the ice only for the summer—geologists collecting rocks and fossils, biologists catching fish in the sea and mites high up on the ice. A few will spend the winter there. All are taking part in continuing programs of research some which spread over only a few years, others which can continue indefinitely.

The Navy, which is responsible for the support of the scientific program, recognizing the permanence of our stay in the Antarctic, has begun an extensive job of constructing permanent buildings at the various stations. Byrd Station, in the center of the icy expanse of Marie Byrd Land, is the first to be made permanent. Hugo snow-millers imported from Switzerland are digging out tunnels in which buildings will be constructed. The tunnels will then be roofed over with snow.

At McMurdo, the main base on the edge of the Ross Ice Shelf, the foundations for a nuclear power plant will have been laid by the end of the southern summer. Three other such plants will follow, another at McMurdo, one at Byrd and the fourth at the Pole itself. After Byrd's temporary buildings have been replaced, permanent structures will be built at the South Pole. Already many of the buildings at McMurdo are of a permanent nature. Latest edifice to rise there is a bowling alley.

The air route from Christchurch, New Zealand, to McMurdo Sound, 2,100 miles south, is now well traveled and routine during the summer months. If all goes well, the first winter-time experimental flights to the Antarctic continent will be made this June or July by C-130 turbo-prop Navy transports. The search is already under way for a site for a permanent air strip on land to replace the runway on the ice of McMurdo Sound which becomes unsafe through melting most summers.

Why do we want to stay? Why do we want to spend all this money—about $20,000,000 in 1960-'61—to keep a foothold in the Antarctic?

The most obvious, most immediate and most practical answer lies in the interest some commercial airlines are taking in a South Polar route between Australia, South America and South Africa. American tourists and business men may someday stop at the South Pole, gasp in the high-altitude, rarified, icy air, trudge a circle through the snow around the Pole to be able to say they made a five-minute trip around the world, and then scurry back into the warmth of the plane's cabin to continue the trip.

To make this possible, the continent's already existing thirty-two weather stations are vital. Studies by glaciologists on the nature and flow of the polar ice cap are necessary.

But meteorologists now stationed at the South Pole are looking forward to even higher-flying objects passing overhead every hour. In the works are weather information gathering satellites which will circle the earth from pole to pole every hour covering a different area of the earth with every circumnavigation.

As the weather satellite passes over the South Pole Station each hour, it will broadcast down to the meteorologists below the information it has gathered on its globe-girdling trip. Cloud cover pictures, measurements of ground temperatures and of the amount of heat the earth is radiating back to the skies will be gathered at the South Pole, broadcast to the world and used by every nation in making forecasts.

What about basic scientific research? Dr. Albert P. Crary, chief scientist of the United States Antarctic Research Program, is now making a zig-zag trip in snow-cat tractors over the polar ice cap from McMurdo to the South Pole. Every other day he and the seven scientists with him stop to make scientific measurements of the depth of the ice, of the weather, of their precise location.

He foresees an end to trips like this as the continent becomes better known. But glaciology, he says, in effect describes the continent. And from what glaciologists learn about how ice flows other scientists can learn much about how metals and earth rocks flow.

"One of the most perplexing mysteries of this planet," he wrote in "The Bulletin of Atomic Scientists" before he left for the Antarctic, "is the history of glaciation"—of how glaciers grow and die.

With possibilities in the future of man-made climates, he went on, the causes and results of past changes in climate must come from continued, concerted effort in the combined disciplines of glaciology, oceanography and meteorology. Where else but in Antarctica, home of the largest glaciers in the world, surrounded by the greatest expanse of water in the world and with the least known and most unusual weather in the world, can this "continued, concerted effort" be carried on?

The United States is also in the Antarctic to stay because eleven other nations are there to stay—including the Soviet Union. A treaty binds these nations together to forego territorial claims and to use the ice-covered continent solely for scientific work for the next thirty-three years.

Masses of data are collected each year by scientists of more than a dozen different specialties from more than a dozen different countries. One scientist alone brought back 340 pounds of scientific records from a winter's study of the aurora australis at the Pole. As the years go by these records and what scientists discover from them will mean more and more to us in our daily lives

After a 1,450 mile overland trek that began Dec. 10 at McMurdo Sound, an eight man group, including four University of Wisconsin scientists, reached the south pole on Lincoln's birthday. —National Science Foundation

South Pole Trek Provided Adventure

By LAURENCE C. EKLUND
Milwaukee Journal
Feb. 19

Washington, D. C.—A University of Wisconsin expedition that reached the south pole last Sunday wrote an important new chapter in the history of antarctic exploration.

Wireless reports that crackled into the navy communications center here last week told a story of adventure and solid scientific achievement—of a further breaching of the secrets of the mysterious "white continent."

Norwegian Roald Amundsen had used dog sleds when he was the first man to reach the pole Dec. 14, 1911. The motorized UW expedition, the seventh party ever to reach the pole overland, was a traveling scientific laboratory.

The purpose of the Wisconsin traverse was to determine elevation, thickness and growth of the antarctic icecap and the nature of the subglacial rock surface.

The traverse was highly successful and its mission was accomplished, it was reported by Dr. Albert P. Crary, chief scientist of the National Science Foundation's United States antarctic research program and leader of the expedition, and Edwin S. Robinson, University of Wisconsin geophysicist.

Exactly what the vast amount of accumulated scientific data will reveal must await careful analysis back at the UW polar research center in the old Brittingham mansion at Madison.

The Milwaukee Journal's "leg man" on the scene, who provided much of the wirelessed detail for this account, was Richard Litell, of the National Science Foundation public relations staff.

Much of their traverse of 1,450 miles was over an area never before explored by man. It was the first time such heavy equipment was used for such a long trek.

The weatherbeaten, bewhiskered scientists arrived at the pole in three diesel powered, tracked vehicles, two of which weighed 12 tons.

The smaller, front vehicle carried navigation and communications instruments. The other two had scientific instruments, bunking space and kitchen equipment.

All three towed special "rolligon" wagons, consisting of a large cargo platform slung between four large rubber tires.

Each tire held 500 gallons of diesel fuel and each platform held three to four tons of supplies. In addition, the snow cats pulled a small glaciological "wanigan" and a small sled with spare parts for the vehicles.

All vehicles were further equipped with mountaineering and emergency equipment, such as ropes, ice axes, rations, first aid kits and radio transmitters and receiving equipment.

The first snow cat, carrying Dr. Crary and Sveneld A. Evteev, Russian exchange glaciologist from the academy of sciences in Moscow, pulled to a stop outside our pole station at 2 p.m. last Sunday.

The weather was clear and crisp and the thermometer reading was 45 below zero, not quite as cold as the 54 below registered on the trail several days earlier.

Then they were greeted enthusiastically and congratulated by the nine civilians and 10 navy men stationed at the pole.

Included among the hosts was Ronald Witalis of 233 W. Allerton av., Milwaukee, a meteorologist who in December raised the Wisconsin state flag at the pole.

The second snow cat arrived a half hour later. It was manned by Mario B. Giovinetto of La Plata, Argentina, and Jack C. Zahn, of Columbus, Ohio, glaciologists from Ohio State university, and Ralph E. Ash, Hibbing, Minn., traverse engineer from the University of Wisconsin.

The last vehicle, carrying the rest of the party, reached the pole station an hour and a half after the lead snow cat.

Bringing up the rear were Robinson, who is from Midland, Mich.; Ardo X. Meyer, Arlington, Va.; geomagnetic man from the United States coast and geodetic survey, and Jack B. Long, Richmond, Calif., another traverse engineer from the University of Wisconsin.

The three vehicles traveled separately in order to carry out simultaneous seismic, gravity and altimetric readings over a comparatively widespread area. The three vehicles were together only at night and during prolonged stops.

The weather during the 64 day traverse was generally favorable. They were delayed only two days because of it.

The roughest going was encountered as the party struggled up the Skelton glacier from the Ross ice shelf to the plateau depot cache, 7,000 feet above sea level.

A severe "white-out," an Antarctic phenomenon that completely obliterates the horizon, caused a full day's delay in the ascent of the glacier. A raging blizzard on the polar plateau caused another day's delay.

On the Skelton glacier it was necessary to zigzag around many treacherous crevasses. For six miles along the ascent, members of the UW party had to walk in front of the vehicles and probe for the hidden cracks in the glacial ice that could have meant disaster for vehicles as well as men.

Once access to the polar plateau had been gained, the route became less dangerous.

Here are the scientific observations successfully carried out between the plateau depot and the pole:

Determination of surface elevation by multiple altimetry methods, in which altimeters were read simultaneously in two vehicles at adjacent minor stations. The pole is 9,200 feet above sea level.

Measurement of ice depth at all major stations every 60 miles by standard seismic reflection methods. In some parts of the Antarctic, the ice is two miles thick and the underlying rock is actually below sea level, it has been learned.

Annual snow accumulations, which vary from 6 to 20 inches, were studied. Annual layers were identified by studying density, temperature, grain size and crystal size.

Ice temperatures were observed to depths of 100 feet. Temperatures below 50 feet gave valuable information on the history of the ice and past climatic variations.

Gravitational values and information on the angles and intensity of the earth's magnetic field were obtained. Total field strength was measured every half mile.

Area of Antarctic

The Antarctic continent, of which large areas still are unexplored, covers about 5,000,000 square miles.

Men in Antarctic Play Can-Opener Roulette

By Wadsworth Likely
New York Herald Tribune

THE SOUTH POLE.

If you spin it just right, the handle of the can opener will stop at the top of its swing.

There's a big can opener perched at the end of the serving counter in the mess hall of the South Pole Station. You know the kind—you secure the can, turn the handle, the can makes one revolution and, presto, the top is off. Very useful instrument at the South Pole where for months during the dark winter there will be no fresh food.

But the twenty men who will winter over at the South Pole this year have discovered a new use for the can opener. Two men can take turns spinning the handle and bet on who can make it stop, balanced precariously at the top of its swing.

It turns out to be a hypnotizing game. It fascinates not only the two men who are playing it but it also rivets the attention of anybody else who happens to be sitting around the mess hall. They watch the handle going around and around and around and around, slowing down, approaching the top—it's gonna stay, it's gonna stay . . . no, down it goes. And the game starts all over again.

It is not possible to estimate how many hours of pleasure the can opener handle will give the men isolated here for the winter, but it is a sure thing that this is not the only way they will have to pass their leisure time is spent.

Movies, music and calls home through the amateur radio will take up most of their leisure time. A call home is a personal, individual thing. Movies and music are communal and therein lies the rub. The twenty men who will be isolated from the rest of the world from March until October are divided into two quite distinct groups.

The ten scientists, led by Ben W. Harlin forty-nine, a meteorologist from Louisville, Ky., are, of course, college graduates. Mostly they like classical music or Dixieland or progressive jazz. They want Alec Guinness movies or the kind which run in the art cinemas, and they don't mind sad endings at all.

The other ten men, led by Lt. Philip K. Swartz, jr., Medical Corps, San Francisco, are Navy enlisted men, picked for their skills as craftsmen and technicians. Few have been to college. They like hillbilly music or the kind with lots of strings. Their choice in movies is Western, the uplift ending and not the downbeat.

Movies are shown four times a week, and the dilemma as to what to show is solved quite simply. Everybody gets his turn to choose a movie. There is a choice among some 300 available. A man can choose the same movie over and over again if he likes. In fact, in the past at isolated stations, a particular movie has been played so often that, finally, it is screened without any sound. The men, who have learned the words by heart, chant them in unison as the lips of the stars silently move.

The music problem is more complicated. The scientists have an extensive library of long-playing classical and jazz records. The science building is wired for sound. Almost any hour of the day or night Beethoven, Mozart, Prokofieff or Dizzy Gillespie can be heard over the loudspeakers

But the ranks of the scientists are not closed. The scientific leader, Ben Harlin, has been known to turn the volume down to a minimum when the music gets particularly esoteric. The scientific solution — earphones at each desk.

The other record player—and that used by the hillbilly music lovers—is, unfortunately, in the mess hall. "Doc" Swartz, too, finds himself not as one with his men in musical tastes. Yet, except at meal times, the Navy men find plenty of opportunity to play the kind of music they like with little complaint from the others.

A photo lab, facilities for arts and crafts, study courses and a small library will help the men fill their leisure time in individual ways And, if all else palls, there's always the handle of the can opener. Oops! Almost had it that time.

Winter Invades Antarctic

AUCKLAND, N. Z., March 22 (AP) — Twenty United States Navy men gathered at the South Pole last night in a twenty-five-mile-an-hour wind and a temperature of 63 degrees below zero and lowered the United States flag for the last time this season. Headquarters in Christchurch reported the ceremony marked the official beginning of the Antarctic winted. The South Pole remains in complete darkness until late August.

AT THE BOTTOM OF THE EARTH—American flag at the Scott-Amundsen South Pole base where scientists are engaged in a year-round study of the mysteries of the Antarctic.

CHAPLAIN PREACHED ONCE AT SOUTH POLE

CORPUS CHRISTI, Texas (UPI)—Lieut. Comdr. E. R. Weidler, a Navy chaplain, believes he has had the most remote congregation in the world.

Commander Weidler, a minister of the Church of Christ, just spent a year in the Antarctic and preached once at the South Pole.

He said he was the first Protestant clergyman to conduct services at the Pole, although a Jesuit priest said Mass there in 1957. The critical weight factor of polar flying limited transportation of chaplains, he said.

The chaplain spent only three days at the Pole, and was stationed most of the year at McMurdo Sound.

Winter readings at McMurdo get as low as 59 below zero, Commander Weidler said, and the weather is very changeable.

"In a few hours it can go from normal to condition zero—which means you stay put," he said. "No one can go outside, and the winds rise to 70 to 80 knots."

Weidler was one of 138 persons who "wintered over" at McMurdo.

"Morale there is excellent," the chaplain said. "Most of the men are typical sailors who manage their own problems and get along well with others."

He conducted religious services every Sunday at the chapel. The church also housed a lounge and library and Commander Weidler kept it open daily.

He talked with his wife and five children in Texas almost weekly by shortwave radio while serving with Operation Deep Freeze 1960.

ANTARCTIC ROUTE SEEN

Commercial Flights Across Pole in Decade Predicted

NORFOLK, Va. (AP)—Rear Admiral George J. Dufek foresees regular commercial aircraft routes across the South Pole in the next ten years.

He made the prediction in accepting a citation from his Naval Academy class for his work in the Arctic and Antarctic.

Sperm Whales Deep Divers

In search of squid, its favorite food, a sperm whale will dive 3,200 feet below the ocean surface, where pressure is 1,400 pounds to the square inch. It often remains submerged for as much as an hour.

4 SCIENTISTS SAVED IN ANTARCTIC STORM

WASHINGTON, Feb. 16 (AP) —Navy helicopters have rescued four scientists trapped in the Antarctic by a blizzard with freezing winds of more than 100 miles an hour.

The men, marooned three nights and two days without food and water, were successfully picked up by helicopters from the Navy ice breakers Staten Island and Glacier.

The Navy, which related the story today, said the rescued men reached safety aboard the ice breakers yesterday.

Their sixty-hour ordeal cracked their hands and lips and blackened their eyes but apparently caused no serious injury, even though the wind was so fierce the men were unable to erect a sheltering tent. To survive, they huddled in sleeping bags behind a crude stone windbreak.

Helicopters from the Navy's Bellingshausen sea expedition successfully completed the risky rescue after the storm subsided somewhat, even though ice and wind prevented a normal landing.

Those rescued were Dr. Brian Roberts, a British observer with the expedition; Lieut. Comdr. James C. Peeler of Salisbury, N. C.; Avery A. Drake of Rolla, Mo., and Larry K. Lepley of Hillcrest Heights, Md.

The pilots who undertook the rescue were Lieuts. (j. g.) Jack C. Thorpe of Port Angeles, Wash., William L. Fluke of Redwood City, Calif.; Donald J. Calder of Baltimore, and Donald E. Price of Morgantown, W. Va.

'Copter Crashes in Antarctica

WASHINGTON, Feb. 17 (AP) —A Navy helicopter used in the rescue of four scientists trapped by an Antarctic blizzard yesterday crashed and burned in the Antarctic today. The Defense Department said no one had been injured. The plane was one of two that lifted three Americans and a British observer to safety yesterday.

ANTARCTIC SUPPLY CUT

Ice Break-up at U. S. Base Drops Materials Into Sea

WELLINGTON, New Zealand, Feb. 26 (Reuters)—Parts for a nuclear power station and other equipment have been lost in an ice break-up at the United SStates McMurdo Sound Antarctic base, it was disclosed today.

The equipment was being unloaded Friday from the Navy cargo ship Arneb when the break-up came in the midst of a blizzard.

The Arneb and the Coast Guard icebreaker Eastwind were forced to put out to the open sea. During the night the two ships salvaged some material from drifting floes.

Indications are that the American spring program in Antarctica will be disrupted.

Storm Costly to U. S. Base

BOSTON, Feb. 28 (UPI).—A sudden blizzard swept away an estimated $100,000 in vital supplies and equipment at the "Operation Deepfreeze" base in McMurdo Sound, Antarctica, according to reports received here today.

ICEBREAKERS MOVE OUT

Start Toward Sea After 29 Days in Antarctic Pack

WASHINGTON, March 2 (UPI)—Two American icebreakers trapped in a huge Antarctic ice pack for more than a week broke free tonight and are continuing their exploration of the Thurston Peninsula area, the Navy said.

A spokesman said Capt. Edwin A. McDonald, task group commander, radioed that his two ships freed themselves and had found open water in the Bellinghausen Sea.

"The weather is good, we're flying helicopters, taking pictures of the coastline and everybody's happy," Captain McDonald said.

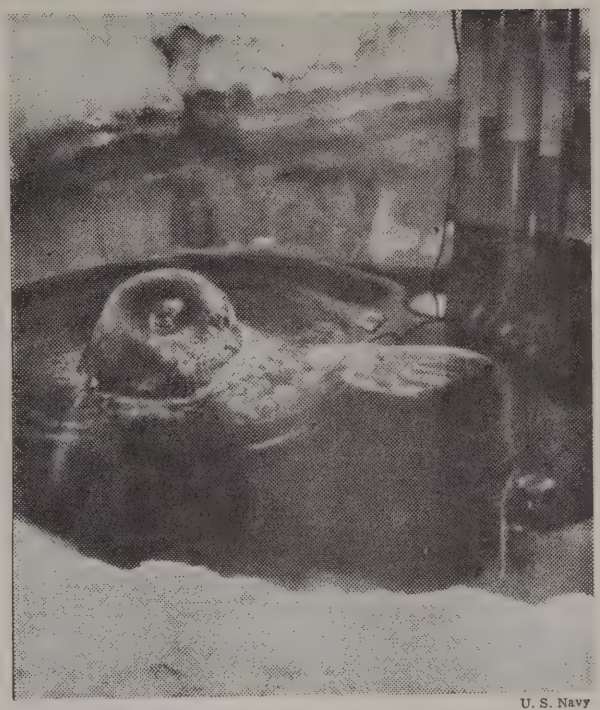
The ships are the Glacier and Staten Island.

AUCKLAND, New Zealand, March 10 (AP) — Battering through thick ice, the United States icebreakers Glacier and Staten Island have started toward the open sea after being held fast for twenty-nine days off the coast of the Thurston Peninsula in the Antarctic, according to the New Zealand Press Association.

The ships were caught last month returning from a scientific expedition to the Bellingshausen Sea. On March 7, a mile-wide lead of open water appeared 500 yards north of the Glacier. A decision was made to try to reach it.

The Glacier, backing off and ramming the ice, took from morning to sunset to batter a distance that could have been walked in five minutes.

Throughout the night, illuminated by searchlights, the Glacier went ten miles through the ice to the Staten Island, which was freed at 4 A. M.



U. S. Navy

A Weddell seal swims in the water hole used by personnel for marine studies as well as testing the melting device.

Antarctic Record Set By Navy Icebreaker

MONTEVIDEO, Uruguay, March 31 (UPI)—The United States Navy icebreaker Glacier arrived here today after making the deepest penetration of the Antarctic by sea.

Her commanding officer, Capt. Philip W. Porter, said it would be "100 years" before any other icebreaker equaled the Glacier's exploit. He was unable to set up a base at the farthest point reached but he left a landmark.

To reach the McMurdo Base, Captain Porter said, the Glacier knifed through ice showing from three to nine feet above water and cut a twenty-four-mile channel.

U. S. Acts to Recover Barge

AUCKLAND, New Zealand, March 15 (AP) — The United States icebreaker Staten Island is steaming 2,000 miles from the Amundsen Sea to recover a fuel barge adrift in McMurdo Sound, the New Zealand Press Association said today. The barge, containing 200,000 gallons of aviation fuel, broke loose from its moorings near the United States base on Ross Island during a storm last week.

Icebreaker Fights Heavy Seas

WELLINGTON, New Zealand, April 3 (Reuters)—The damaged United States Navy icebreaker Edisto was reported today fighting heavy Antarctic seas on her way back to New Zealand after losing a propeller yesterday. The Edisto was ordered two days ago to abandon her search for a fuel-storage tanker containing 200,000 gallons of oil that had been adrift for three weeks in McMurdo Sound near the Main United States Antarctic base.

Office Set Up For Explorations In Antarctic

WASHINGTON, June 17— The National Science Foundation boosted the status of America's Antarctic effort today with creation of a new Office of Antarctic Programs.

Dr. Thomas O. Jones will head the new office and Dr. Albert P. Crary will be its chief scientist.

Previously, Antarctic exploration was a function of the NSF's Office of Special International Programs. Drs. Jones and Crary held the same positions in that organization.

Dr. Jones, 53, is a geochemist who has been in charge of the Antarctic program since the foundation took it over from the Navy in 1958. Married and the father of two daughters, he lives at 7504 Holiday terrace, Bethesda.

Dr. Crary, 49, is a geophysicist and explorer whose most recent Antarctic exploit was to lead a traverse party from McMurdo Sound to the South Pole. He lives at 2400 Nineteenth street N.W.

Antarctic Colony

Little America, on the Bay of Whales in Antarctica, was established by Richard E. Byrd in 1929.

U.S., BRITAIN DIFFER ON POLAR ICE PACK

WASHINGTON, May 17 (AP) —A scientific debate between the United States and Britain appeared imminent today on the question: how thick is the ice on the road to the South Pole?

This was indicated by a report from Dr. Albert Crary of the National Science Foundation, chief scientist of the United States Antarctic program.

Dr. Crary reported he had recently found the ice about three-fifths of a mile thicker at one point on the trail than had previously been reported by Sir Vivian Fuchs of Britain after his dash across Antarctica in 1958.

But Dr. Crary, addressing the foundation's headquarters staff, said it was still not clear who erred on the measurements—his own party of explorers, or Sir Vivian and his colleagues.

Both parties made measurements by setting off dynamite explosions deep in the ice and estimating the ice thickness by detecting the reflected sound waves on portable seismographs.

According to the United States estimates the ice at one particular point was between 11,000 and 12,000 feet thick. Sir Vivian, on the other hand, figured he was traveling on thinner ice—8,000 to 9,000 feet.

United Press International.

WASHINGTON, May 18.—An American explorer says those stories of the Antarctic ice cap melting and flooding New York and other costal cities just aren't true.

The explorer, Dr. Albert P. Crary, is chief scientist of the United State Antarctic research program. Last December he led an eight-man party on a 1400-mile trek over the continent's high plateau from McMurdo Sound on the coast to the South Pole.

Much has been written about the disaster which would occur if the Antarctic ice cover should melt abruptly, either by natural or artificial means. But Dr. Crary told the National Science Foundation yesterday that the sea level around Antarctica hasn't changed in 11,000 years.

WASHINGTON (AP) — The antarctic may hold a treasure of wonder drugs, waiting to be tapped.

This is the view of Dr. Albert Crary of the National Science Foundation.

Crary, one of the nation's foremost polar scientists, has just returned from long-term service in the cold lands.

In a talk Wednesday to the foundation's headquarters staff, he said: "We have found that animals in the antarctic are relatively free of bacteria, and it has been suggested that this may be due to the possible presence of antibiotics in algae plants there. This should be followed up."

Algae are tiny fungus-like plants that grow in the sea or on moist ground, and often occur as scum atop ponds.

Crary, chief scientist of the U.S. antarctic program, threw cold water on theories that the antarctic might hold rich and economically mineable mineral treasures.

Antarctic Fire Razes 2 Buildings

United Press International.

CHRISTCHURCH, N. Z., Feb. 2.—Fire destroyed two buildings at the American base on Ross Island, Antarctica, today, but no one was injured.

High winds spread the fire from a parachute building to an electronics building, but Navy fire crews put it out in an hour with chemicals.

Antarctic to Get Nuclear Power

United Press International.

McMURDO SOUND, Antarctica.—A nuclear power plant in Antarctica will be ready for operation next March 1, U.S. Antarctica commander Rear Adm. David M. Tyree said.

He said that excavation of the site already had been completed and that materials for construction of the plant itself already had arrived. He said that contractors would operate the plant for six months in order to train Navy men in its operation.

There is a cold job awaiting some manufacturer. The Atomic Energy Commission wants bids on a portable, nuclear power plant for the Byrd Station in the Antarctic.

The job calls for research, development and installation and test operation in a snow tunnel at the site.

Bad weather conditions in the area make it difficult to supply the camp with Diesel fuel and other supplies, except during limited periods of the year. So the A. E. C. believes that the nuclear power plant would simplify logistics.

The power plant would produce steam, which in turn would operate snow-melting equipment that helps keep the camp supplied with fresh water. Another such reactor already is being procured for Navy use at McMurdo Sound, also in the Antarctic.

Soviet Scientist Terms U.S. Mercy Trip an Error

WELLINGTON, New Zealand, April 13 (AP)—An American mercy flight brought an ailing Soviet scientist from deep in Antarctica, but the scientist said today that the trip had not been necessary.

Leonid Kuperov, a Soviet ionospheric physicist, said after X-rays showed he had no chronic ulcer:

"The whole thing was a mistake."

Mr. Kuperov had been working with American scientists at Marie Byrd Land, a station almost 700 miles from the South Pole, when he fell ill. A chronic ulcer was suspected, and the United States team decided the seven-month polar winter would be too hard on Mr. Kuperov.

A plane with a double crew of twenty-three Navy airmen flew from Rhode Island and brought the Russian from Marie Byrd Land to McMurdo Sound last Monday, then on to New Zealand.

QUONSET POINT, R. I., April 19 (UPI) — A Soviet scientist's stomach-ache cost the United States Government $124,000.

The Navy revised downward yesterday its original estimate of how much it had cost to evacuate Leonid P. Kuperov from Byrd Station in the Antarctic.

Originally, the Navy said that the mercy mission had cost $136,000.

A spokesman for Air Development Squadron 6 at Quonset Naval Air Station said yesterday that the flight of two of the unit's planes had cost $114,000 and putting an icebreaker on emergency station had cost $10,000 more.

ANTARCTIC FISH PUZZLE

Biologist Ponders Source of Finds on Ice Shelf

STANFORD, Calif. (UPI)—Dr. Donald E. Wohlschlag has returned home from Antarctica with a mystery.

The Stanford University biologist and other scientists are trying to determine how remains of fifty large fish and invertebrates arrived on the bare Ross ice shelf.

His preliminary examination shows the samples to be two kinds of common Antarctic cod fish.

There is some evidence showing that the ice cap reproduces itself from the bottom to the top. That is, it forms below the sea, pushes up and then melts.

Dr. Wohlschlag theorizes that the fish remains may have followed this course to the surface.

FUEL TRAIN STUDIED AS ANTARCTIC NEED

MC MURDO SOUND, Antarctica (UPI)—United States Antarctic Commander Rear Adm. David M. Tyree indicated recently that fuel trains might replace aircraft in supplying vital fuel to American bases inland in Antarctica.

The trains of tractors would tow huge rubber tires filled with thousands of gallons of fuel.

Admiral Tyree said the use of rollitanker equipment, which currently is being investigated, looks like "the answer to the problem of running the fuel train overland rather than delivering by air."

Rolli-tankers have been used on the scientific traverse from McMurdo Sound to the South pole this season and on the Victoria land traverse in previous seasons.

Admiral Tyree said he doubted that the project could be organized by next season because of the difficulty in acquiring the equipment. He said it had been proposed that the Navy borrow such tractors from the Army to make an experimental run with the fuel train from Little America to Byrd Station in Marie Byrd Land, but the possibility was fairly remote because the cost would be more than $1,000,000.

The rolli-tanker would consist of two huge tires, each with a capacity of 500 gallons of fuel. A platform between the two tires permits carrying equipment.

The admiral noted that fuel requirements had increased at all stations in Antarctica and that Byrd Station now was being used more than before as a staging point for field parties. He said fuel accounted for more than half of the weight of equipment used by these parties.

Antarctic Whale Kill 1,027,332 in 50 Years

WASHINGTON, Apr. 24.—A total of 1,027,332 whales have been killed in the Antarctic in the last fifty years, the National Academy of Sciences reported today.

In a report on whales included in a study called "The Life Sciences in Antarctica," Dr. Remington Kellogg, assistant secretary of the Smithsonian Institution, said there is little doubt that at the present rate of slaughter, whales are being killed faster than they can reproduce themselves.

Harpoon Killed Two Whales

Tass, the official Soviet press agency, says a harpoon from a Soviet whaling ship in the Antarctic in 1961 pierced the hearts of two seventy-foot whales.

BIOLOGICAL 'CLOCK' ON REGULAR TIME

Polar Tests Show Animals and Plants Unaffected by Earth's Rotation

McMURDO SOUND, Antarctica (Science Service)—An experiment conducted at two South Pole stations apparently has dispelled the notion that the earth's rotation controls the biological "clocks" of plants and animals.

Dr. Karl C. Hamner, University of California at Los Angeles botanist, and two assistants showed that modifying the influence of the earth's rotation on bean plants, hamsters, fungi and fruit flies failed to alter their inner rhythms.

The experiments were aimed at clarifying the workings of the "biological clock," the system whereby plants and animals function with almost clocklike regularity. For instance, some plants fold their leaves at night and open them by day. Birds know when to migrate and bears know when to hibernate. Even man shows rhythm in his sleep cycle, and in daily variations of body temperature and blood sugar levels.

Scientists are trying to determine if this is controlled by metabolic changes within the individual organisms or by external factors such as temperature, atmospheric pressure, gravity, cosmic rays, the earth's magnetic field or rotation.

In investigating the latter, Dr. Hamner and Dr. Gir Raj Sirohi and Dr. Takashi Hoshizaki selected the United States South Pole and the McMurdo Sound stations because of their closeness to the earth's axis of spin.

The experiments were conducted in total darkness on clock-driven, rotating turntables that could be run either counter to or with the direction of the earth's rotation.

Some turntables were set at time periods of less than twenty-four hours, others of more than twenty-four hours, and still others were rotated at twenty-four-hour periods in a direction counter to the earth's rotation. The control turntables were stationary.

The hamsters, plants and other organisims all failed to show any loss of rhythm during the ten-day rotation period.

Antarctic Expeditions

More than 170 exploring expeditions, most of them British, have visited the Antarctic since it was first sighted in 1820.

NAVY 'SKYHOOK' AIDS RESCUE FROM ICE

WASHINGTON (NANA)—A "skyhook" with remarkable capacities for picking up men or small objects from an ice floe or boat deck has been developed by the Navy.

To date, it has made two pick-ups of mail from a boat deck. It snagged mastodon tusks from an archeological party on the Canadian tundra and picked up small geological samples.

It was designed especially to pick up stranded or injured men from otherwise inaccessible places.

A buoyant drop-container rescue packet is parachuted from the aircraft to the person on the surface, who then readies it for the pick-up operation. The rescue packet has been made very simple so that even badly injured personnel can manage it.

The packet contains a harness that is put on like a pair of overalls. This harness is attached to a 500-foot, high-strength nylon lift line attached to a balloon.

The balloon already is plugged to a helium bottle, so that the person to be rescued has only to open a valve until the balloon is inflated. When the balloon rises to its limit the passenger is ready for the pick-up. The lift line is erected vertically in wind conditions up to forty knots.

The aircraft is equipped with a horizontal yoke, or wide fork extending forward from its nose. In operation the pilot simply flies a horizontal path up wind into the lift line, engaging it below the balloon at an altitude of approximately 500 feet.

WHALES GO STRATEGIC

Dutch Expert Asserts They Scatter When Attacked

CAPETOWN, South Africa (AP) — Antarctic whales are adopting wartime convoy tactics to avoid slaughter each summer by whalers. They scatter when attacked.

Capt. I. J. Kleyn of the Dutch refinery ship Willem Barendsz says:

"There was a time when we could be fairly certain of capturing a school at a time. But these days the animals hear the chasers approaching and scatter in all directions at high speed.

"They do sharp turns and sometimes come up astern of the chaser, so that our next big requirement in the science of whaling is to have an underwater radar to show which way the whales are swimming.

"Whales have become increasingly conscious of the presence of danger and they are said to pass on such caution to succeeding generations.

SHIP HAS MISSION AS A LABORATORY

A Converted Cargo Vessel Will Add to the Nation's Knowledge of Antarctic

A small, sturdy Navy cargo ship that has seen service in ice-choked Arctic waters will be transformed into an elaborate seagoing scientific laboratory that will increase this country's knowledge of the Antarctic.

The vessel is the U. S. N. S. Eltanin, a 266-foot Diesel-electric twin-screw vessel that was built in 1957, primarily for use in Arctic supply missions.

As a floating laboratory, she will be capable of performing research in meterology, upper atmosphere studies, marine and terrestrial biology, physical oceanography, submarine geology and geomagnetism.

Plans for the conversion were announced April 15 by the National Science Foundation and the Navy's Military Sea Transportation Service.

The science foundation said the Eltanin would be ready late in the fall to play her part in the Antarctic research program. The vessel is expected to spend at least ten months a year in Antarctic waters.

The Eltanin will continue to be owned and operated by the Military Sea Transportation Service. The science foundation will oversee the ship's research program.

Plans for the conversion are now being drawn by the Military Sea Transportation Service in consultation with Lamont Geological Observatory of Columbia University.

PENGUIN UNDER STUDY

Biologist Sees Aid in Cure of Human Ailment

WELLINGTON, New Zealand (Reuters) — Information gathered from the study of penguins in the Antarctic could help scientists to find a cure for certain kidney diseases in which the human body fails to excrete even small amounts of salt, according to D. S. Douglas, biologist of Duke University, North Carolina.

Mr. Douglas is spending his second season at the Cape Hallet penguin rookery studying the mechanism that enables Adelie penguins to separate and excrete salt from food and water.

Last year it was found that young penguins have a well-developed salt gland that functions immediately after hatching, and helps the bird to discharge excess salt from the sea water it drinks.

This year Mr. Douglas is studying the development of the salt gland in the young penguins and in the embryo and changes in the salt and water balance during the forty-day fasting period while penguins incubate eggs.

WHALE PARLEY OPENS

17 Nations Meet in London to Set Rules for World Fleet

LONDON, June 19 (AP)—Seventeen nations met in London today to discuss how to share the world's whale harvest.

William Vane, parliamentary secretary to the British Ministry of Agriculture and Fisheries, said he believed an end of differences was in sight.

The meeting, expected to last three or four days, was called to fix quotas for Antarctic whaling and to discuss measures governing whales generally.

Mr. Vane warned that if whale stocks were allowed to decline too far, the expensive whaling fleets of all nations would be laid up.

Participating in the talks are Argentina, Australia, Brazil, Canada, Denmark, France, Iceland, Japan, Mexico, New Zealand, Norway, Panama, Sweden, South Africa, the Soviet Union, Britain and the United States.

NEW LIGHT IS SHED ON MAMMOTH MYTH

WASHINGTON, (Science Service)—The woolly mammoths discovered frozen in northern glaciers did not die from a catastrophic glacier sweeping down from the north as popularly believed.

The hulking mammoths that roamed Siberian tundras during a recent ice age probably died by accidental drowning and were later frozen, Columbia University geologist William R. Farrand reports in Science. The poor condition of most of the frozen giants shows that death did not occur quickly.

The popular myth that the woolly mammoths were frozen within a few hours by a huge glacier disregards all scientific facts, Dr. Farrand said. The number of frozen mammoths found, thirty-nine, compared with the probable total population of more than 50,000, is about what scientists would expect from accidential burial.

Only four nearly complete frozen mammoth remains have been found despite many scientific explorations into the northern wastelands.

The preserved animals probably drowned in a lake or bog or were buried alive by a river bank caving in when the mammoths strayed too close to the edge.

U.S. POLAR EXPERT QUITS SOVIET BASE

Glaciologist Is on His Way Home After Study Under Exchange Program

By SEYMOUR TOPPING

The New York Times.

MOSCOW, March 14—Gilbert Dewart, a United States glaciologist, left the south polar research station at Mirny yesterday on his way home after completing his program of studies with the Soviet Antarctic expedition.

The scientist sailed from the Roadstead of Mirny Observatory aboard the Soviet Diesel-electric ship Ob with members of fifth Soviet expedition that had wintered over for a year.

Mr. Dewart, of Cloverdale, Calif., was at Mirny, headquarters of the Soviet bloc operations in Antarctic, on Aug. 3 when fire destroyed the metereorology building, killing a Czech, an East German and six Russian scientists.

Tass, the Soviet press agency, in reporting the departure of Mr. Dewart, said it completed the fourth successful exchange of scientists between Soviet and United States expeditions.

While at Mirny the California scientist made a snow vehicle trek with his Soviet colleagues from the base to the Pole of Cold.

Mirny is on the Indian Ocean at Wilkes Land, or, as Russian maps describe it, "Pravda Coast" of Antartica. Sveneld A. Yevtseyev, a Soviet glaciologist who for thirteen months carried out observations with the United States Antarctic expedition, returned to Moscow March 9.

Under the exchange agreement between the national committees for Antarctic Exploration of the Soviet Union and the United States, Mr. Yevtseyev spent the winter of 1960 at the United States McMurdo base.

Mr. Yevtseyev carried out the annual cycle of glaciological observations with United States scientists in the area of McMurdo Station. He completed his studies at an Amundsen-Scott South Pole Station, which he reached with United States scientists who made the overland trek from the shore of Ross Sea to the South Pole.

Leonid Kuperov, Soviet geophysicist, recently joined the United States Antarctic expedition for 1961. Stuart Gilmore, a United States physicist, is working at Mirny with the sixth Soviet expedition. The Ob is bound for the Soviet Union and presumably Mr. Dewart will be dropped off at some port on the way. East German and Czech scientists are also aboard the vessel.

The Ob is also carrying seasonal research parties of the sixth Soviet expedition. These parties made a series of offshore investigations in the southern part of the Indian Ocean and geological surveys of mountains on Queen Maud Land. Before picking up scientists at Mirny, the Ob cruised off the Antarctic coastline for three months. She made three trips between Davis Sea and Princess Astrid Coast under the summer research program for 1960-61.

According to a message relayed from Mirny, Soviet scientists have "mothballed" their station at Komsomolskaya until the next Antarctic summer and departed in three snow vehicles for Mirny.

Six Soviet scientists headed by the geophysicist Georgy Lazarev are making the trek with a tractor-sledge train. Traveling under temperatures more than 60 degrees below zero Fahrenheit, the party was reported to have covered twenty-five miles of the 540-mile journey to Mirny.

In Leningrad preparations have begun to outfit the seventh Antarctic expedition to replace the sixth headed by Valentin Driatsky.

Was in I. G. Y. Party

Mr. Dewart is attached to the seismology laboratory of the California Institute of Technology in Pasadena. His home is in Cloverdale, Calif., where his parents edit two regional newspapers. His first experience in Antarctic was with the initial party to winter at Wilkes Station, established for the International Geophysical Year of 1957-58 several hundred miles to the east of Mirny.

Antarctic Soviet Doctor Cuts Out Own Appendix

MOSCOW, May 8 (AP)—A 26-year-old Soviet physician, marooned by a blizzard at the Novo-Lazarev research station in the Antarctic, removed his own appendix in surgery lasting almost two hours, Tass said today. He was reported recovering and able to walk again.

The Soviet press agency said Dr. Leonid Rogozov was struck by acute appendicitis April 30 and realized that an operation was urgent. Using a mirror, he cut into his own abdomen that night, Tass said.

The dispatch made no mention of anesthesia and said Dr. Rogozov had performed the operation, "in spite of severe pain," with the help of a mechanic and a meteorologist from the station's twelve-man complement.

The station is on the Queen Astrid coast, several hundred miles from the main Soviet Antarctic base at Mirny. The weather prevented any attempt at flying Dr. Rogozov to Mirny for surgery there.

1899 Shelter Found in Antarctic

BOSTON, Feb. 8 (AP)—Two scientists who landed at Cape Adare, Antarctica, have found a wooden building erected in 1899 still standing. It proved servicable after snow was dug out.

A delayed message about the discovery was received yesterday from the Coast Guard icebreaker Eastwind. It said that the scientists had also found "an iron cross on a boulder, marking the grave of the first man to die while living on the Antarctic continent."

The scientists, Brian Reid, 30 years old, of Rotorua, New Zealand, and Colin Bailey, 26, of Adelaide, Australia, were landed by helicopter from the Eastwind Jan. 13. They went to Cape Adare, Mr. Reid said, to study an isolated penguin rookery.

The message from the Eastwind said that the building the scientists used as a shelter on Cape Adare had been built in 1899 "by the first party of men ever to winter-over on the Antarctic continent, [a party] headed by a Norwegian-born Australian named Borchgrevink."

The grave apparently was that of a member of this party. The message reported:

"Crudely chiseled on a metallic plaque was the terse epitaph: 'N. Hanson, zoologist, Norge, 28-10-1899, 28 year.' Also on the plaque was a six-pointed star with the letters 'S. C.' within it. Although neither of the scientists could figure the meaning of the 'S. C.' it is possible that it stands for 'Southern Cross,' the name of the ship which brought the party to Antarctica."

The scientists also found two other buildings at Cape Adare but they had fallen apart. They had been built by the northern party of the British explorer Robert F. Scott when it wintered-over in 1911.

In the shelter, the men found scientific journals and covers dating to the mid-1800's, unexposed photographic glass plates, tins of chocolates, cans of pea soup, safety matches, knife grinders and bunks for ten men.

The New York Times Feb. 9, 1961

The site of building (cross)

U.S.-SOVIET POLAR LINK

American Is on Antarctic Sled Train, Tass Reports

LONDON, Jan. 2 (AP)—Stewart Gilmore, American Polar explorer, has arrived in the Antarctic with the bulk of the sixth Soviet expedition to the territory, the Moscow radio reported tonight.

The broadcast said the expedition last checked in at the Mirny scientific observatory, main Soviet base in the Antarctic. It said Mr. Gilmore would continue to work with the Russians during the coming months.

LONDON, Jan. 27 (Reuters)—Gilbert Dewart, American Seismologist, was riding today a Soviet tractor sled train that has moved 1,689 miles from the coast of the Davis Sea into the heart of the Antarctic continent, the Soviet news agency Tass reported.

The tractor train is on its way to the South Geomagnetic Pole carrying supplies to the Soviet Vostok station. It was only 560 miles from its goal, Tass said.

The report was from Valentin Driatsky, leader of the Sixth Soviet Antarctic Expedition. It said that a second tractor-sled train was carrying fuel to Komsomolskaya Station, 1,392 miles from the Soviet main base of Mirny on the east coast of Antarctica.

Woman Reported at Antarctic

AUCKLAND, N. Z., June 6 (AP)—American radio operators at McMurdo Sound in the Antarctic heard a woman's voice yesterday over the radio from the Soviet base at Mirny, according to the New Zealand Press Association. Hitherto, Americans in daily contact with the Soviet Antarctic base scoffed at Russian assertions that women have been stationed there this winter.

Antarctic Ship Icebound

CANBERRA, Australia, Feb. 27 (Reuters)—The Australian Antarctic Research ship Magga Dan is trapped in an ice pack near Chick Island off Antarctica, the External Affairs Ministry anonunced today.

ANTARCTIC STORM STEALS AIRPLANE

Blizzard Carries It 10 Miles and Leaves It in Crevasse —Second Craft Wrecked

March 18

An account of an Antarctic blizzard that stole one airplane and dismantled another before the eyes of the men it lifted into the air and deposited on the ice yards away reached here late last week.

The communication came from the Australian National Antarctic Research Expedition at Mawson, Antarctica.

Hendrik Geysen, the officer in charge of the main Australian Antarctic base, described the "catastrophe" in a radio message to Canberra after makeshift aerials had been erected to replace those destroyed by the storm.

The blizzard was one of the worst Mawson had ever experienced. Winds as high as 116 miles an hour and barometric pressures as low as 27.9 inches were recorded. Winds blew for hours at 80 m.p.h.

The "stolen" plane was a Dakota that had weathered winds of 110 m.p.h. earlier last year. The big blizzard that struck on the night of Dec. 9, however, was too much for the plane.

The front tie-down cable on the Dakota broke inside the ice where it had been secured, and a fifteen-ton cable to the plane's undercarriage and both seven-ton wing tie-down cables were sheared under the force of the winds.

Then, the aircraft simply disappeared. It was found three days later perched precariously in a crevasse near the top of a 350-foot ice cliff ten miles from Mawson. Salvage operations will resume next May if the cliff does not break away and go out to sea in the meanwhile.

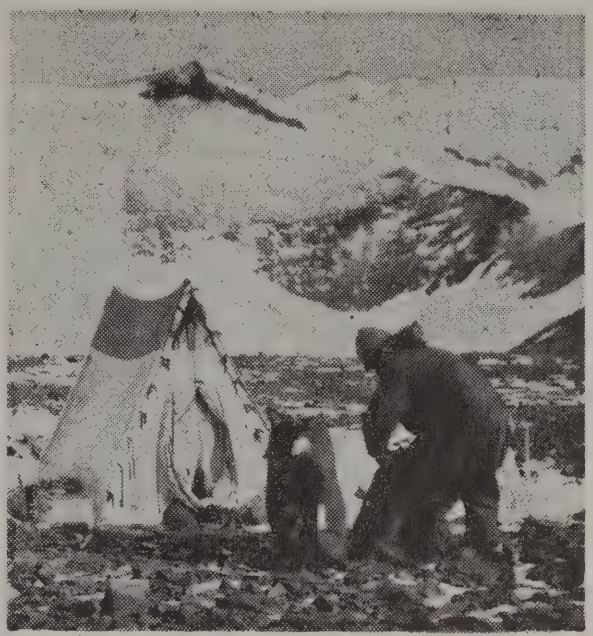
The other plane, a Beaver, suffered an even worse fate. It disintegrated while the men at Mawson watched helplessly, too busy holding on to each other to keep from being blown away with the Beaver's tail assembly and wings.

Throughout the storm, the huts of the station were bombarded with lumps of ice. Forty-four-gallon drums of fuel were wrenched from their cache and sent down to the rocks at the edge of the harbor. Heavy wet snow and sleet transformed the rocks at the station into an ice rink.

Antarctica Vast

Antarctica is as large as Europe and Australia combined.

Insects Uncovered in Antarctica



Keith A. J. Wise, scientist, at his camp in the Antarctic

A scientist who for two months has been trying to find insects in Antarctica has finally succeeded by rolling over stones on a desolate mountain plateau.

The region, near McMurdo Sound, seemed utterly inhospitable and devoid of life. It was a largely snow-free plateau near the head of Mackay Glacier and about 6,000 feet above sea level.

The creatures found included some two dozen springtails and about a dozen non-parasitic mites. Mites, strictly speaking, are not insects but both are members of the division of the animal kingdom known as the anthropods.

The National Science Foundation, which is supporting the work, reports that this seems to be the highest elevation at which insects have been found in the south polar region.

The discovery was made by Keith A. J. Wise of New Zealand. He had tried in vain to find insects by draping nets in the wind, installing scoops in aircraft and poking among penguin feathers.

He now plans to look for insects near the head of the Beardmore Glacier, half way from McMurdo Sound to the South Pole. He has also found springtails at Cape Hallett and on Mount Suess. Although no external parasites were seen on the penguins, one snow petrel was carrying two biting lice.

Arthropods are the only land animals of Antarctica—except for man.

NEW TEAM IN ANTARCTIC

Australia's 1961 Unit Takes Over at Mawson

MELBOURNE, Australia — The party to man the Australian Antarctic base at Mawson during 1961 has now taken over, according to Australian News and Information Bureau.

The polar ship, Thala Dan, with ten scientists and technicians aboard, and the Magga Dan, with the remainder of the party, have arrived at Mawson.

The Thala Dan is now pushing farther east, mapping the coast of Enderby Land. The Magga Dan is heading west for Chick Island, where a party is to install a new automatic wheather station.

HURRICANE IN ANTARCTIC

Australia Reports Damage at Research Station

MELBOURNE, Australia—Headquarters of the Australian Antarctic Division said recent winds of unusual force had created considerable damage at Australia's permanent Antarctic scientific research station at Wilkes, on the Antartic mainland, according to the Australian news and information bureau.

At the height of the hurricane, in which winds reached a sustained velocity of 136 miles an hour, the roof of a newly-constructed explosives magazine completely disappeared, and the floor assembly was deposited on the other side of a hill 400 yards away.

In addition, a radio aerial mast, a glaciology mast, transmission lines and the flues of the mess hut were carried away.

ANTARCTIC UNIT ADDED

Australians Set Up Weather Station on Chick Island

MELBOURNE, Australia — Headquarters of the Australian Antarctic Division said here that a party of Australian scientists on board polar relief vessel Magga Dan had established Australia's second automatic meteorological station at Chick Island, about 320 miles east of the main Australian permanent scientific research base at Mawson, according to the Australian News and Information Bureau.

When the Magga Dan became trapped in heavy pack-ice some distance from the island, the expedition's two helicopters made eighty trips to ferry to the island ten tons of equipment and the scientists and technicians needed to erect the installation.

The Chick Island station would transmit six-hourly meteorological reports to Wilkes Base, from where it would be relayed to the Central Weather Bureau in Melbourne, a Division spokesman said.

POLAR TEAM SAFE

Australians Back at Base After Month's Exploring

MELBOURNE, Australia—A radio message received recently at headquarters of the Australian Antarctic Division said a party of five Australians based on Wilkes permanent scientific research station in the Antarctic had returned to the base after a month of inland exploration on the Antarctic ice plateau.

According to the Australian News and Information Bureau, the message said that despite four blizzards, the party traveled through previously unexplored territory to a point more than 7,000 feet above sea level, and at their farthermost position inland, entered the region of the midnight sun.

New Antarctic Range

CAPETOWN, South Africa, March 17 (AP).—The Japanese Antarctic Expedition has discovered a new mountain range in Antarctica, an expedition spokesman said. It lies about 200 miles southeast of the Japnese base at Swyowa.

Antarctic Discovery

The Palmer Archipelago, Antarctic island group off northwest Palmer Peninsula, was discovered in 1898 by Adrien de Gerlache.

FRONDIZI IGNITES ANTARCTIC FUSE

Visit to Deception Isle Stirs Sovereignty Claims in Area

By EDWARD C. BURKS
The New York Times.

BUENOS AIRES, June 7—President Arturo Frondizi not long ago touched off an international protest over a desolate island hardly larger than the Bronx.

He made a quick visit to Deception Island, in the Antarctic and "reaffirmed Argentine sovereignty."

This was passed off by many Argentine observers as just another Frondizi effort to curry popular favor on a patriotic issue. But there were immediate repercussions.

Chile also claims the island and has a base there. The British have a base, too.

There was an official protest by Chile, a rejection of the Argentine and Chilean claims of sovereignty by Britain, and club-wielding by the police in Santiago, the Chilean capital, to break up an anti-Argentine demonstration.

The dispute over the island, 700 miles south of Cape Horn, focused new attention on an old quarrel.

Argentina says that she has been a polar power, with bases in the Antarctic, since 1904. She claims a pie-shaped slice of icy ocean and Antarctic mainland stretching from the twenty-fifth to the seventy-fourth Parallel, west of Greenwich.

Chile has an overlapping claim, from the fifty-third to the ninetieth parallel.

Britain, the United States and other countries frequently set up bases on these so-called sovereign territories of Chile and Argentina on the long northward-pointing Palmer peninsula.

Deception is close to the peninsula. The most recent dispute about Antarctic sovereignty took place in the Argentine Chamber of Deputies over ratification of the twelve-nation Antarctic treaty. The United States and the Soviet Union have ratified it.

The treaty provides for peaceful exploitation and exploration of the continent, bans nuclear tests and "freezes" for a period of years all territorial claims.

Although President Frondizi and his Radical Intransigent party supported the treaty, the opposition Radical Peoples party, second strongest group in Congress, charged that the pact compromised Argentina's claims.

The Radical Peoples group staged a boycott. Señor Frondizi's party suffered a few defections and was barely able to muster a quorum for the decisive vote.

The New York Times June 11, 1961

QUARRELS: Argentine President's visit to Deception Island (cross) protested.

It takes ninety-seven members to make a quorum, and the Radical Intransigents had to bring two sick members into the Chamber and obtain the support of three Conservative deputies to achieve a 98-0 vote for the treaty. The Senate has ratified it.

The difficulty in the Chamber was another indication that Antarctic territorial claims are not lightly regarded here. Any Argentine map always shows the huge pie-shaped Antarctic slice, approaching Alaska in size, as part of the nation.

More important, the Argentines and Chileans have been sending missions to the Antarctic and have had permanent bases many years. Argentina says she has nine on the peninsula, on islands or in the frozen wastes of the Weddell Sea.

The most recent base was established by the Argentine Air Force on Robertson Island in the Weddell Sea last March. It is an island where the wind velocity often surpasses 125 miles an hour. Chile also claims the island.

Argentina credits Chile with four Antarctic bases and constant explorations. But the Argentines claim longevity. The peninsula is contested partly because it projects beyond the Antarctic Circle into the south temperate zone.

The Argentine and Chilean bases are engaged in scientific studies. Argentina's bases generally have two to five buildings and space for seven to twenty-six persons. Her Ellsworth Scientific Center in the Weddell Sea has seventeen buildings and space for thirty-one.

In addition, the Argentines have set up more than forty wooden hut shelters in the Antarctic in the last ten years. The prefabricated huts permit scientists to move about rapidly since they do not have to take time to construct field centers.

ANTARCTIC TESTED AS FOOD FREEZER

Argentina Seeking Data on Storing Her Perishable Surplus in Ice Cap

BUENOS AIRES, March 4 (Reuters)—Experiments are being carried out to discover whether the Antarctic ice cap could be turned into a huge deep-freezing plant to store Argentina's surpluses of perishable foodstuffs, whether for domestic consumption or for export.

In 1959, a preliminary test was made. Several carcasses of beef were taken to the Orkney Islands and buried in the snow. No official report on the result has yet been released.

Last December, the Argentine Navy icebreaker Gen. San Martín went as usual to relieve the military personnel manning Ellsworth Base, on the Antractic mainland.

Working jointly, the Argentine Antarctic Institute and the Confederation of Argentine Rural Societies had assembled a large supply of meat (pork, lamb and beef) as well as eggs, butter, cheese, and other perishable items, which were shipped to Ellsworth aboard the icebreaker.

The personnel manning the base during the Antarctic winter have been instructed to open an undersnow cave, as deep as possible, to test the theory that foodstuffs can be kept there indefinitely. In the past, caves more than twenty yards deep have been opened, but the task is trying and cumbersome.

The temperatures in these areas average around minus 7 degrees Fahrenheit and move within a range of minus 22 degrees in June to 3 degrees in November. At about twenty yards below the surface, the temperature remain around minus 13 degrees all the year round, the variation between summer and winter being less than one degree.

It is generally believed that bacteria will not survive in polar conditions, but the president of the Argentine Antarctic Institute, Rear Admiral Rodolfo Panzarini, is prepared to prove the contrary.

"Out of seventy-five perfectly sterilized test tubes which one of our teams of scientists took to the Antarctic," he said, "no less than sixty-nine developed micro-organisms. What is more important, eight of these micro-organisms can only live in polar conditions. They were unknown in the rest of the world and tests showed that they became inactive when cultivated at temperatures of around 20 degrees Centigrade (68 degrees Fahrenheit)."

The possible impact of these microorganisms on stored foodstuffs has not yet been fully assessed. It may be that at very low temperatures the rhythm of their proliferation is negligible and that for all practical purposes meat, eggs or butter can be kept fit for human consumption for scores of years.

Wintering Team Returns To Tokyo

Mar. 31

The 14-member group of the fourth Antarctic wintering team, headed by Assistant Prof. Tetsuya Torii of Chiba University, returned to Tokyo Friday aboard an SAS plane ahead of the other members of the Expedition Team aboard the Soya now sailing for home.

The wintering members carried out successful scientific observation and researches during a one-year and seven-month expedition in the Antarctic although they lost one member of the team, Shin Fukushima, a promising scientist who was found missing in a blizzard last year and whose body has not been recovered yet.

JAPAN NOW LEADS ANTARCTIC WHALING

TOKYO (Reuters)—An acquired taste of the Japanese people for whale meat is helping the Japanese whaling industry to attain top position in the Antarctic.

While three other Antarctic whaling nations, Norway, Britain and the Netherlands, have cut the scope of their operations, the Japanese Antarctic whaling expedition has expanded in the last five years by buying abroad four fleets—factory ships and their respective groups of hunting craft. One of these has just been purchased from the Vector Whaling Company of Britain.

As a result of this expansion, Japan, according to members of the local industry, is expected to send seven fleets to the Antarctic next season.

Regarding the number of whales caught, as reported by the Japanese Fisheries Board, Japan achieved the leading position last season with 5,216.8 whales (blue whale equivalent), compared with 4,566.6 caught by Norway, 2,789 by the Soviet Union, 1,900 by Britain, and 1,037.6 by the Netherlands.

Concerning whale resources, a spokesman for the Taiyo Fisheries Company said the Japanese industry was worried by the evident depletion in the Antarctic. Efforts to reach an agreement on national quotas failed last year, with the result that Norway and the Netherlands left the International Whaling Convention.

A Mawson Institute

ADELAIDE, Australia, April 16

The occasion was the inauguration, by the Prime Minister (Mr. Menzies), of the Mawson Institute of Antarctic Research, housed at present in a corner of the geological museum in the Mawson Laboratories at the university.

Sir Douglas Mawson's greatness as an explorer and scientist, and his courage and endurance, were the theme of the Prime Minister's address.

Among those present who heard Mr. Menzies and other speakers commend the aims of the institute were several Australians who accompanied Mawson on his pioneer expeditions to the Antarctic years ago, or who have been closely associated with recent polar exploration.

Present also was Lady Mawson, widow of the explorer, and relatives, old colleagues and friends at the university at whose instigation the institute has been inaugurated.

Among the many messages of goodwill and congratulation from British and foreign scientific bodies read to the gathering was one from the Scott Polar Research Institute, Cambridge University, and one from the Soviet Academy of Science, USSR.

Mr. Menzies said in his address that he hoped this notable occasion, and the reason for it, were known to everybody in Australia, and in particular to the younger people.

"We are here to talk about one of the greatest Australians that this country has had," he said.

Mawson's achievements and enormous stature were recognised not only in our own country but throughout the world.

His greatness was versatility; he was a great explorer but also a great scientist.

In the highest sense of the word he was something of a statesman.

With all his science and all his exploration it was he, more than anyone else, who added to the territory and responsibility of this country many millions of square miles of Antarctic territory.

When we examined maps which marked out areas listed as Australian Antarctica, there was one man above all men that could be thanked for it—Sir Douglas Mawson.

"To be an explorer of the world you must first of all have enormous imagination," Mr. Menzies said.

"Mawson was a great man of great imaginative quality and courage.

"Imagination is worthless without the courage to meet the unknown and its dangers. In that field he is a household name, not only here but round the world.

"Sir Douglas Mawson also needed—and had—endurance.

"With these three enormous qualities, which were essential for his work, he set an example which no one else has been able to equal—results outstanding in the whole history of Antarctic investigation.

"I hope that Antarctic research, from our point of view, will continue to be regarded as something of immense importance.

"The Antarctic in due course may become one of the main highways of transportation around the world.

I believe that what may come out of this previously desolate area may be not only interesting but superb in its significance.

"I hope that all will honor the name of Mawson who, more than any man, provided the key with which to unlock the door."

Sir George Ligertwood, who presided as chairman of the institute's committee of management, said that Lady Mawson and her daughters, by their valuable gift of Sir Douglas Mawson's library and papers, had laid a firm foundation for the institute.

Among those present at the gathering, he said, were three members of the expedition which Sir Douglas Mawson led in 1911-1914 — Instructor-Captain M. H. (Johnny) Moyes, Mr. A. L. Kennedy and Dr. F. L. Stillwell.

Including the Prime Minister, representatives of three Governments which sponsored the research expedition of 1929-30, led by Mawson, were also present.

Sir George Ligertwood said that the institute's objective was that in time it would become the Australian centre of Antarctic research and that a great deal of original material relating to the Antarctic would be deposited here.

At present the institute had no home. Books and documents would be kept in the Barr Smith Library and museum material and some documents and papers would be held in the Geology Department.

But the institute wanted to get everything together under one roof for the convenience of research workers.

He added: "We have the site, Mr. Prime Minister. The rest is up to you."

Former polar explorer Mr. John Rymill, of Penola, who read messages from the Scott Polar Research Institute, and the Royal Geographical Society, England, said that Mawson was one of the greatest men who ever went to the Antarctic, and he was proud that his memory would be perpetuated in the institute.

The decision to establish the Institute was taken in 1959 at the instigation of old colleagues and friends at the University.

It will have a five-fold purpose:—

- To foster polar studies and research.
- To maintain and develop a collection of Antarctic equipment, especially that associated with Sir Douglas Mawson's explorations.
- To maintain and develop collections of geological and biological specimens associated with the Antarctic.
- To maintain a room or rooms for the use of workers engaged in Antarctic research.
- To promote whenever possible public lectures relating to polar research.

It will be controlled by a committee of management comprising Sir George Ligertwood (chairman), the Vice-Chancellor of the University (Mr. Henry Basten), the Professor of Geology (Professor A. R. Alderman), Dr. A. Grenfell Price, the Barr Smith librarian (Mr. W. A. Cowan), the Registrar (Mr. V. A. Edgeloe), Sir Douglas Mawson's daughter Mrs. I. M. Thomas and her husband, Mr. I. M. Thomas, a marine geologist, and the Vice-Chancellor of the National University at Canberra (Professor L. G. H. Huxley).

At the moment, the Institute is only a very small room in a corner of the geological museum in the Mawson building at the University.

The hope of those who have conceived it, however, is that funds will eventually be raised to build a major annexe to the Mawson building, perhaps of two storeys, where an Antarctic collection worthy of the man it commemorates could be displayed.

Professor Alderman said that in about two years space in the Mawson building now occupied by the Geography Department would become available and the material on exhibition could be increased.

One or two rooms for research students might also then be found.

Ultimately, however, whether it became a great centre of research would depend on the completion of a new building which might cost up to £40,000.

Sir Douglas Mawson made three trips to the Antarctic — the first, with Shackleton, as a member of the British Expedition of 1907-9; the second, which he led for Australia, in 1911-14; and the third in the early nineteen thirties.

Lady Mawson

Mawson Library

The splendid private Antarctic library of the late Sir Douglas Mawson is to be presented to the Mawson Institute of Antarctic Research at the University of Adelaide.

ADELAIDE, Australia, Apr. 12.—

The announcement was made yesterday by Lady Mawson on her return from a two-year visit to Britain, Holland and the United States.

The library consists of several hundred books and many letters written to Sir Douglas Mawson by such famous fellow Antarctic explorers as Amundsen, Drygalsky, Greeley and Shackleton.

It is believed to be the most complete record of Antarctic exploration in the Commonwealth.

"I do not know of anything which is missing from it," Lady Mawson said yesterday.

"I have discussed it with my two daughters, Mrs. I. M. Thomas and Mrs. Peter McEwin, and we are all agreed that the Institute should have it."

Lady Mawson has returned home especially for the official opening of the Institute on Saturday by the Prime Minister.

"I am very grateful to the University and to all those individuals who have joined in sponsoring the Institute," she said.

"Nothing, I know, would have pleased my husband more. It is a great honor."

Lady Mawson will also present to the Institute a portrait of the great explorer painted in England in 1933 by Henry James Haley, R.A.

During her voyage to England early in 1959 she was browsing through some of her husband's old letters when she opened one which mentioned that he was "just going to sit for a portrait by Haley."

"I'd forgotten all about it," she said.

"On the offchance, I got in touch with Mr. Haley when I arrived and found that he still had the painting.

"When I went out to see him it gave me quite a shock to walk into his room and see my husband there in his academic robes. It is a very fine likeness and I decided at once to buy it."

Lady Mawson has now almost completed the manuscript of the biography of her husband which she has been writing since his death.

As soon as she has checked through it with her two daughters and obtained their comments, she will send it to her publishers.

The biography will contain much information about Sir Douglas Mawson never previously published.

Lady Mawson's memories of her recent trip include a holiday in Cheshire with Sir Philip and Lady Brocklehurst. Sir Philip and Sir Douglas Mawson were members of the British Antarctic Research Expedition of 1907-9.

She was also in London when the annual dinner of the Antarctic Club was held.

There are more than 150 members, some of them over 80, and they try to hold their annual dinner close to the anniversary of the death of Capt. R. F. Scott.

"I had a wonderful time," Lady Mawson said, "because quite a number of them were kind enough to take me out to dinner and reminisce about old times."

Tales of the Arctic

PETER FREUCHEN'S BOOK OF THE ESKIMOS. Edited and with a preface by Dagmar Freuchen. Illustrated. 448 pp. Cleveland and New York: The World Publishing Company. $7.50.

By EVELYN STEFANSSON

IN 1957, after insisting on carrying his own bags up a steep flight of steps, Peter Freuchen died suddenly while en route to the North Pole. Except for Richard E. Byrd, and despite his foreign beginnings, Freuchen was perhaps better known to more people in the United States than any other explorer of our time. He had been discovered by television producers and audiences alike. They found him a marvelously picturesque figure, epitomizing the average person's idea of what an explorer should look like—but seldom does. Freuchen was well over six-feet tall, he had a flowing, curly beard, twinkling eyes, one wooden leg, a fantastic sense of humor, was both gentle and fearless, and had conquered but not tamed the English language.

The first time I met Freuchen, some twenty-five years ago, being a collector of folk songs, I asked him to sing an Eskimo song for me. Without a moment's hesitation he began a Greenlandic song, the sound of which gave him such obvious pleasure that, no whit troubled by his enormously long peg leg, he further enhanced his enjoyment and mine by illustrating the dance that should accompany it. The performance displayed his peculiar genius. He could always communicate what he had seen and felt; he loved doing it, and he did it superbly. He was a man who could capture any audience, entertain them, move them, shock them a little and send them away with a satisfied feeling that they had lived vicariously a portion, however small, of his romantic life.

AS one who lived long with death as a familiar neighbor, he savored each moment, automatically recording it in memory and calling it back in splendid color at will. Indeed some critics criticized him for this talent and considered him a creative writer, an artist who would heighten the color of a scene to make it come alive, and rearrange the furniture a little to improve a perspective. This Peter never denied.

There is a well-known unwritten law recognized among Polar librarians that when a white man visits the Eskimos, the longer he stays, and the more primitive the Eskimos, the deeper he falls in love with them. Freuchen, no exception, went farther; he married a lovely young Eskimo girl and lived happily with her and her people for a decade. It is said that he could think like an Eskimo as well as eat, hunt, dance, sled, sing and raise a family, Eskimo style. When his wife Navarana died, he returned to a more sophisticated life, but it was a life always connected with the North.

In "Peter Freuchen's Book of the Eskimos" his widow Dagmar (as unlike Navarana as one can imagine, for she is a chic fashion artist for Vogue!) has gathered together in a single volume most of what Freuchen has written about the Eskimos, both from published and unpublished sources. No indication is given as to which parts are which and when the different sections were written. This gives the text a timeless, charming quality, albeit a few readers will still want to know dates and places.

He is at his best as a story teller and there are splendid stories here. Tales of hunting, traveling and trading, of Eskimo customs, strange and familiar, of life, death and cannibalism, of hardship and feasting and great joy and sadness. The book is divided into chapters, with such titles as, "Eskimo Environment and Origins," "Trading With the Eskimos," "Eating and Visiting," "The Eskimo Mind" and "Polar Justice." Peter Freuchen's years in the North covered half a century starting in 1906 and spanned the Stone and Space Ages. Many will read this book for the pleasure that comes from showing the experiences of one who valued insight over statistics, who valued understanding, gentleness and generosity above footnotes and scholarly details.

Summer Was Unseasonable

ORDEAL BY ICE. Selected and Edited by Farley Mowat. 364 pp. Boston: Atlantic-Little, Brown. $6.50.

By JIM LOTZ

NORTH of the Canadian mainland lies a vast archipelago of islands, surrounded by a drifting, ever-changing mass of pack ice. Wind and tide so change the extent and location of this shifting ice, that any ship venturing into these regions can be trapped, held and sometimes crushed and sunk in a matter of hours. And yet, through this archipelago lay the way to Asia —the Northwest Passage. Only in 1904, when Roald Amundsen's Gjoa succeeded in sailing through this passage, did the dream of the early explorers come true.

How did the first explorers fare in this huge, dreary labyrinth of bare land and ever-moving ice as they sought the way west by sea? Farley Mowat, in his latest book, lets them speak for themselves. He has rescued from obscurity many fine accounts of early Arctic exploration, and, by careful selection and editing, draws a vivid picture of man's struggle against ice and weather in the Arctic. Beginning with Martin Frobisher's first voyage in 1576, and ending with Charles Hall's venture in 1860, the selections trace the fortunes of those who sought the Northwest Passage, and of those who sought the seekers. A running commentary by Mr. Mowat links the excerpts.

Before Sir John Franklin and his men in 1845 "forged the last link of the Northwest Passage with their lives," many others had already died in the attempt. Jens Munk watched his crew die one by one of scurvy on the south shore of Hudson Bay in 1619-20, until only he and two others were left alive to sail the ship home to Denmark. His immensely readable narrative has an almost unseemly lightness about it.

The prose in all of these selections matches the Arctic scene in its starkness and beauty. What more melodious summary of the Arctic climate exists than that of Frobisher's chronicler, George Beste, who wrote, "Winter there must be extreme, where there be found so unseasonable a summer." And Abacuk Pricket, "who lived to come home," in a subtly revealing account, shows that Henry Hudson was a martinet as well as a martyr. The early accounts, even when describing death and disaster, have a singularly refreshing air about them.

Mr. Mowat shows that, until the intruders into the north began to learn from its inhabitants, they had little or no success. Early contacts with the Eskimos were marked by mutual suspicion; one of the first of these contacts ended with "the General [Frobisher] hurt in the buttocks with an arrow." Only slowly did the European explorers come to admire, and then to imitate, the Eskimo way of life. For with these people lay the key to the conquest of the Arctic—a way of life adapted to the environment.

As early as 1830, John Ross, as the excerpt from the narrative of his second voyage shows, had an appreciation, if not an understanding, of the Eskimo diet. Leopold McClintock, whose expedition recovered the only written record of the Franklin party, refined sledding techniques and equipment, although he traveled by man-hauling his sled, and did not use dogs. It remained for Charles Hall, a Cincinnati blacksmith, to take the ultimate step and live like an Eskimo. In the excerpt from his book, however, he gives the impression of almost totally relying on his Eskimo companions.

A PREVIOUSLY neglected group of Arctic explorers here receive something of their due. From Sherard Osborn's delightful "Stray Leaves From an Arctic Journal" comes a lively account of the antics and heroism of that forgotten band of men—the ordinary seamen who formed the backbone of British naval expeditions in the nineteenth century. These men left their names and their bones strewn across the Arctic landscape as they hauled heavy sleds over the interminable ice in 50 below —sometimes with their officers sitting on the sleds.

In his connecting narrative, Mr. Mowat is perhaps too credulous in accepting Eskimo reports of men of the Franklin expedition being alive as late as 1862, and he ascribes greater feats to the early Norse and pre-Columbian Arctic explorers than the scanty evidence suggests. Today, work and travel in the Arctic is a comparatively comfortable business. "Ordeal by Ice" eloquently illustrates the sufferings of those who first showed the way north.

Mr. Lotz has served on Canadian and American expeditions to the Arctic.

On the Arctic Frontier

NORTHWEST BY SEA. By Ernest S. Dodge. 348 pp. New York: Oxford University Press. $6.50.

By JEANETTE MIRSKY

AS its title states, this is the story of the stirring, sustained attempts made to find the shortest sea route from Europe to the Far East, a sea route whose lanes lie to the north of the Americas through the waters of the Arctic Ocean. This book makes it clear that the recent transpolar voyages of the nuclear-powered submarines, Nautilus, Skate and Seadragon, belong in spirit and deed to an admirable enterprise begun almost 500 years ago, and it underlines the enterprise's continuing theme. Ernest S. Dodge, editor of The American Neptune and director of the Peabody Museum at Salem, Mass., has compiled a valuable chronicle, distinguished for its narrative skill and its sure command of historical materials.

Mr. Dodge's chronicle falls into two parts. The first covers the numerous explorations of the sixteenth and seventeenth centuries when the promoters, backers and explorers were animated by a single motive: to discover the way to the Indies. Five years after Columbus' westward course to Cathay was stopped by the barrier of the New World, the Northwest Passage was sought by John Cabot. He officially started the English on their voyaging to Arctic waters. Interspersed among the notable expeditions and explorers—Martin Frobisher, John Davis, Henry Hudson and William Baffin—are a score of lesser names. Placing these men and their voyages in the forward movement of the search gives the book its special importance. Again and again it was some forgotten navigator who, poking and prying, pointed out new paths to try or probed the frustrations which lay in wait in every waterway left unvisited.

Because great or small they were activated by the dream of a short, quick, profitable passageway to the wealth of the East, failure fogged all their efforts. And yet, as Mr. Dodge points out, the by-products of such "failures" were the immensely lucrative establishment of the Newfoundland cod fishery, the northern whaling industry and the fur empire that controlled the lands bordering Hudson Bay. He also includes the other assets, intangible but equally valuable. "The geography of the world was expanded and profound knowledge was accumulated on weather, meteorology, navigation, ice, glaciers, refraction, plants, animals, and new races of men. Not the least important was the experience gained by hundreds of English seamen in some of the roughest waters and most difficult conditions to be found anywhere."

The second section of the book, Solving the Puzzle, covers those expeditions that, in the eighteenth and nineteenth centuries, sailed to test the intriguing geographical speculations that could find lodgement on maps and in theories while sizable regions remained unknown. No longer dreaming of riches and commercial power, the explorers addressed themselves to the task of mapping the lands and waters of Arctic America. Piece by piece the puzzle was forced to yield its design — our maps carry the names of men and ships and moments made memorable in the tracing of North America's sprawling width.

TRAGEDY added its imperative call, reanimating the immense task men had set themselves: the search and rescue parties that sailed to find the lost Franklin Expedition filled in the last major outlines of America's Arctic coastline With the beginning of the twentieth century, the necessary solid knowledge had been accumulated to permit Roald Amundsen to steer the Gjoa through the intricate maze of northern waterways that link the Atlantic to the Pacific. At the time his exploit seemed like the gallant finale to an ancient quest; now, with nuclear powered submarines, it stands as the introduction to new voyages through the Northwest Passage.

The detailed chronology that begins the book provides a useful and fitting introduction. If a grumble is permitted, I would question the pertinence of the two chapters devoted to Northeast Passages and the lack of a comprehensive map to match the text.

Miss Mirsky is the author of "Elisha Kent Kane and the Seafaring Frontier."

Expedition Of Lost Men

ABANDONED: The Story of the Greely Arctic Expedition, 1881-1884. By A. L. Todd. Introduction by Vilhjalmur Stefansson. Illustrated. 323 pp. New York: McGraw-Hill Book Company. $5.95.

By JIM LOTZ

IN "Abandoned," A. L. Todd pays tribute to the men of one of the most ill-fated expeditions ever to venture into the Arctic. After being neglected for years, the tragic story of Adolphus Greely's expedition to the Arctic in 1881-84 has formed the theme of two books in recent months — Theodore Powell's "The Long Rescue," published last summer, and now, "Abandoned." Mr. Todd has drawn extensively on previously inaccessible material in the private papers of Greely and David L. Brainard, two of the six survivors of the expedition. With insight and impartiality he reveals why the expedition was so successful during its first two years in the field, and how a body of tough, seasoned Army veterans reacted when they found themselves abandoned, a thousand miles north of the Arctic Circle.

In August, 1881, three officers, nineteen men, a contract surgeon, an Eskimo and a Greenlander had established Fort Conger, on Discovery Harbor, at latitude 81°44′, N. This station was the most northerly of a chain occupied during the First International Polar Year of 1882-83. During this period, Greely and his men collected scientific data that were used for comparative purposes during the International Geophysical Year of 1957-58, the successor to the Polar Years. Sledge parties explored the unknown interior of Ellesmere Island, and a dash to North Greenland achieved a new "farthest north."

THE ship that had taken the party to Discovery Harbor had experienced little difficulty in navigating the channels and basins that separate Ellesmere Island from northwest Greenland. The resupply of Fort Conger in 1882, and its evacuation in the summer of 1883, were considered to be routine matters by the Army authorities in Washington. Few there had been very enthusiastic about the idea of the International Polar Year, and few were worried when the attempt to reach Fort Conger in 1882 failed.

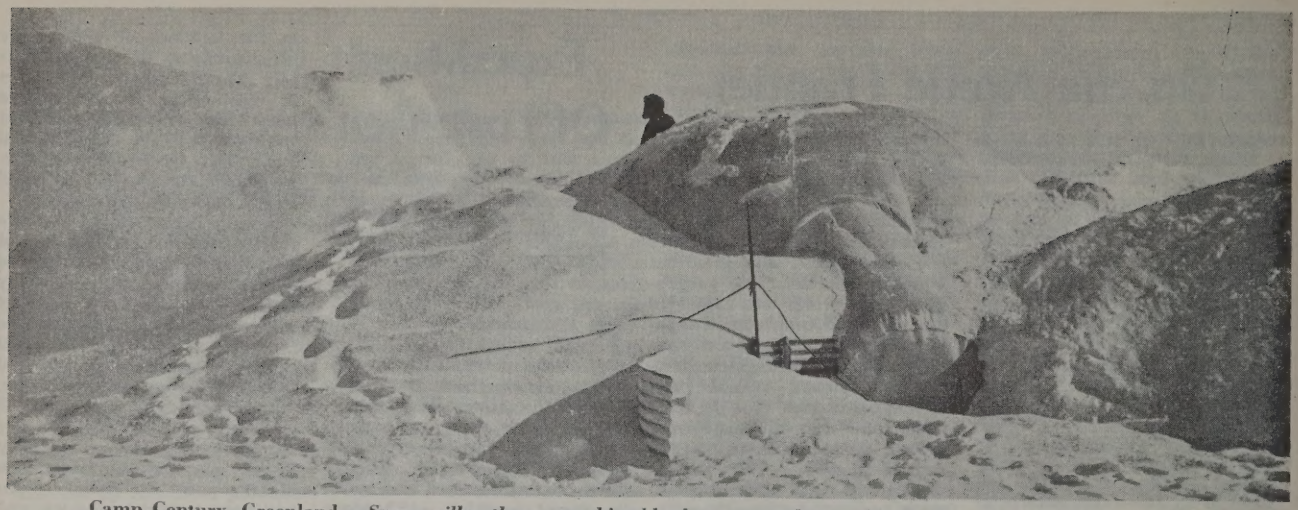
Greely had received definite instructions that, should he not be relieved by the summer of 1883, he was to make his way south to be met by a relief party. On Aug. 9, 1883, the twenty-five men left the well stocked Fort Conger, situated in an area abounding in game, and set off south. At the end of a hazardous 250-mile journey by boat and ice floe, they learned the dreadful truth. The steamer sent to relieve them had been caught in the ice, and sunk. The relief party had not waited for Greely, but had sailed south in small boats, leaving behind only a few supplies, and a little food. The message left for them contained only vague promises of relief. Greely's party faced an Arctic winter on a barren island, with little food, inadequate clothing and no shelter.

At Fort Conger, Greely had been something of a martinet; at Camp Clay, on Pim Island, he became a loved and respected leader. With little real hope of surviving the winter, Greely maintained discipline, stretched two months rations over eight months, looked after his men, and kept up their hopes of rescue. In spite of threats of mutiny by a dissident faction, constant starvation, sickness and death, Greely hung on. In May, their rations gone, the party lived on shrimps, tripe-de-roche, seaweed, and oil-tanned sealskins. On June 22, 1884, a relief expedition finally reached Pim Island.

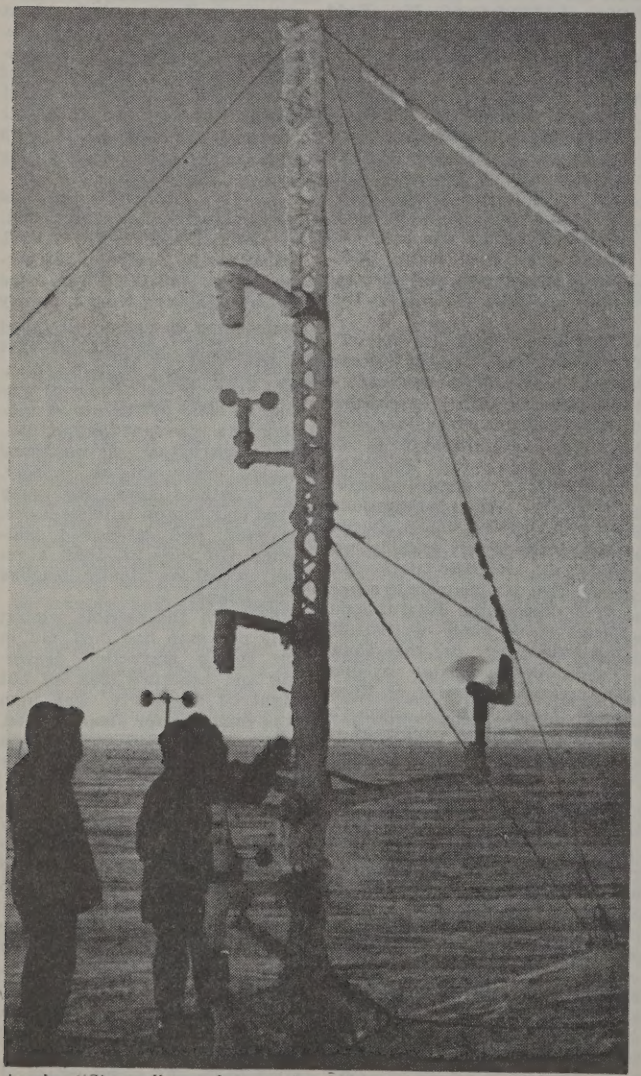
Through the terrible winter, only one man had died, but in the spring, starvation, drowning and exposure took all but eight of the party. One man was executed for stealing food, and another, who lived through the winter without fingers or feet, died on the way home.

Mr. Todd's narrative alternatively shows the bungling, ineptitude and plain stupidity of the authorities at home, and the sufferings of the forgotten men at Camp Clay, as their lives ran out, day by terrible day. In this full treatment of the Greely epic, none of the horrors that happened at "the outpost of the lost" is concealed. But, as Vilhjalmur Stefansson remarks in his introduction, "we think better of humanity for these revelations."

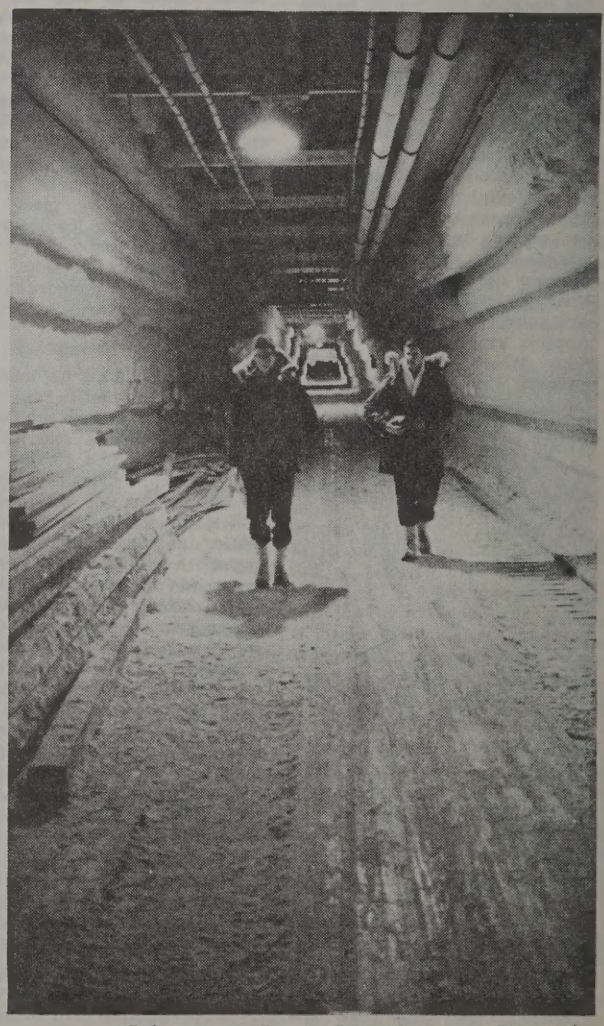
Mr. Lotz, a Canadian scientist, has served with several Arctic expeditions, including Operation Hazen (1957-58) which at times followed in the footsteps of Greely and his men.



Camp Century, Greenland. *Snow miller throws a white blanket across the geodome surface. Once snow hardens on the rubberized canvas, structure is deflated, leaving an iced roof in the shape of a dome.* *U.S. Army Corps of Engineers.*



At the "Sigmet" weather station, Kent Goering worked with camp meteorologist collecting data.



Subterranean Scouts: Søren Gregersen, Denmark; Kent Goering, U.S., stroll a frosty "street."

PHOTOS BY LEE LOCKWOOD, BLACK STAR